PB90-269077

Technology Evaluation Report: International Waste Technologies/Geo-Con In situ Stabilization/Solidification. Volume 4. Update Report

Foster Wheeler Enviresponse, Inc., Edison, NJ

Prepared for:

Environmental Protection Agency, Cincinnati, OH

Sep 90

U.S. Department of Commerce
National Technical Information Service
NTIS

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EPA/540/5-89/004d

September 1990

TECHNOLOGY EVALUATION REPORT: INTERNATIONAL WASTE TECHNOLOGIES/GEO-CON IN SITU STABILIZATION/SOLIDIFICATION

Volume IV. Update Report

RISK REDUCTION ENGINEERING LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY
CINCINNATI, OHIO 45268

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7. AUTHOR(S)
Stephen Sawyer

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9. PERFORMING ORGANIZATION NAME AND ADDRESS
Foster Wheeler Enviresponse, Inc.
Livingston, New Jersey 07039

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Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, Ohio 45268

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Project Officer: Mary K. Stinson (201) 321-6683 (FTS) 340-6683

16. ABSTRACT

The long-term performance tests provide information on the first follow-up sampling and analysis on the SITE program demonstration of the International Waste Technologies additive, and the Geo-Con deep soil mixing equipment. The samples containing PCBs, were collected one year after the demonstration, and the chemical and physical test results were compared to those obtained during the demonstration. This was the first part of a 5-year monitoring program on this in-situ stabilization/solidification process. The demonstration was performed in April 1988 at an electric service shop in Hialeah, FL. Volume IV contains the technical operating data--logs, laboratory analyses, and microstructural analyses.

The technical criteria used to evaluate the effectiveness of the in-situ process were contaminant mobility--based on leaching and permeability tests--and the potential long-term integrity of the solidified soils--based on physical tests and microstructural studies. This sampling analysis work provides additional evidence on the long-term integrity of the treated soil as well as on contaminant mobility.

The overall conclusions obtained, when comparing the long-term and demonstration results, are that the PCB mobility appears to be unchanged and the potential for long-term durability appears to have increased.

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NOTICE

The information in this document has been funded by the U.S. Environmental Protection Agency under Contract No. 68-03-3255 and the Superfund Innovative Technology Evaluation (SITE) Program. It has been subjected to the Agency's peer review and administrative review and it has been approved for publication as a USEPA document. Mention of trade names or commercial products does not constitute an endorsement or recommendation for use.

FOREWORD

The Superfund Innovative Technology Evaluation (SITE) program was authorized in the 1986 Superfund amendments. The program is a joint effort between EPA's Office of Research and Development and Office of Solid Waste and Emergency Response. The purpose of the program is to assist the development of hazardous-waste treatment technologies that will be necessary to meet new cleanup standards, which require greater reliance on permanent remedies. This is accomplished through technology demonstrations that are designed to provide engineering and cost data on selected technologies.

This project consists of an analysis of the International Waste Technologies/Geo-Con proprietary in situ stabilization/solidification process demonstrated on a commercial scale and monitored periodically. The demonstration took place at a former electric service shop owned by General Electric Company in Hialeah, Fla. The effort was directed at obtaining information on the performance and cost of the process for use in assessments at other sites. The Technology Evaluation Report describing the field activities and laboratory results of the demonstration has been previously issued. The Applications Analysis Report, which also has been issued, provides an interpretation of the available data and presents conclusions on the results and potential applicability of the technology. This Long-Term Performance Report provides the results and conclusions drawn from the field sampling of the treated soil one year after the demonstration to determine the effects of time and field weathering on the properties of the treated soil.

Copies of this report can be purchased from the National Technical Information Service, Ravensworth Bldg., Springfield, VA, 22161, 703-487-4600. Reference copies will be available at EPA libraries in their Hazardous Waste Collection. You can also call the SITE Clearinghouse hotline at 1-800-424-9346 or 202-382-3000 in Washington, D.C. to inquire about the availability of other reports.

E. Timothy Oppelt
Director, Risk Reduction
Engineering Laboratory

ABSTRACT

This Long-Term Performance Report provides information on the first follow-up sampling and analysis on the SITE program demonstration of the International Waste Technologies (IWT) HWT-20 additive and the Geo-Con deep-soil-mixing equipment. The samples were collected one year after the demonstration, and the chemical and physical test results were compared to those obtained during the demonstration. This was the first part of a 5-yr monitoring program on this in situ stabilization/solidification process. The demonstration was performed in April 1988 at a General Electric Co. electric service shop in Hialeah, Florida. The analysis of this technology is contained in two previously issued reports, the Technology Evaluation which describes the demonstration and the Applications Analysis which evaluates the technology based upon all available data.

Operational data and sampling and analysis information during the demonstration, which was the first field application of the IWT additive, were carefully monitored and controlled. The effectiveness of the Geo-Con deep soil injection and mixing equipment was also evaluated. Conclusions were reached and reported in the first 2 reports concerning the technology's suitability for use in cleanups of various contaminants and at different locations. The results and conclusions of this long-term field monitoring were analyzed by comparing them to results obtained from the post-demonstration samples and where applicable to the pre-demonstration results.

The technical criteria used to evaluate the effectiveness of the in situ process were contaminant mobility -- based on leaching and permeability tests -- and the potential long-term integrity of the solidified soils -- based on some physical tests and microstructural studies. This sampling and analysis work provides additional evidence on the long-term integrity of the treated soil as well as on contaminant mobility.

The conclusions drawn from the long-term data as compared to that of the demonstration are as follows:

(1) The leaching of polychlorinated biphenyls (PCBs) remained very low -- about 0.1 ug/L -- and did not change, thus continuing to support the evidence that immobilization of PCBs is likely. However, because of the low leachate concentrations for both the treated and untreated soils, a result of the low soil concentrations encountered -- less than 180 mg/kg in most of the tests -- immobilization cannot be confirmed.

(2) The volatile organic (VOC) concentrations in the leachates remained low -- less than 1.4 mg/L. The long-term sample values were larger by a factor of greater than 2, for soil samples with the same VOC concentration levels. Since IWT did not tailor their additive to VOCs, no conclusion on VOC immobilization should be made.

(3) The physical properties showed the most impressive changes with the permeability decreasing by a factor of more than 2 -- averaging 1.4×10^{-7} cm/s -- the unconfined compressive strength increased by 150% -- to an average value of 980 psi -- with the bulk density and moisture contents remaining unchanged at 1.9 g/ml and 18 wt% respectively.

(4) Freeze/thaw weathering test results, although still unsatisfactory, showed significant improvement in weight loss values compared to the demonstration results -- an average weight loss of 4.1% versus 6.6%. The wet/dry results were the same as the satisfactory results obtained during the demonstration, with a relative weight loss between test specimen and control of 0.1 wt%.

(5) The microstructural results were similar to those obtained from samples collected after the demonstration, which indicates that long-term durability should be satisfactory.

Thus, the overall conclusions obtain. when comparing the long-term and demonstration results, are that the PCB mobility appears to be unchanged and the potential for long-term durability appears to have increased.

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APPENDIX B

ANALYTICAL LABORATORY REPORT OF NUS CORPORATION

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-50 B-6 - AS REC'D
NUS SAMPLE NO: P0113777
DATE SAMPLED: 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
9150	pH (in water)	12.2	
9310	Acid Neutralization Capacity	DONE	
ACRS	Chromium	86.9	mg/kg
ACUS	Copper	95.6	mg/kg
APBS	Lead	290	mg/kg
AZNS	Zinc	119	mg/kg
8123	Total PCBs in soil PCB-1260	99	ug/g
I620S	Percent Solids at 103C	80.2	%
T55	Moisture content	19.5	%
T70	Specific gravity f-grn	2.51	g/cc
T75	Unconfined compressive strength	647	psi
T85	Bulk Density	1.82	g/cc

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-51 B-6
NUS SAMPLE NO: P0113779
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
T01	Falling Head Permability	2.4x10-7	cc/sec

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-50 B-6 - TCLP LEACH
NUS SAMPLE NO: P0113778
DATE SAMPLED . 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
9915	TCLP Extraction	DONE	
9122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.05	ug/L
	PCB-1221	<0.05	ug/L
	PCB-1232	<0.05	ug/L
	PCB-1242	<0.05	ug/L
	PCB-1248	<0.05	ug/L
	PCB-1254	<0.10	ug/L
	PCB-1260	<0.10	ug/L

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
REPORT DATE: 06/21/89
WORK ORDER NO: 55830

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-72 B-6 w10
NUS SAMPLE NO: P0113795
DATE SAMPLED: 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT UNIT
8915	TCLP Extraction	DONE
9122	PRIORITY POLLUTANTS - PCBS	
	PCB-1016	< 0.05 ug/L
	PCB-1221	< 0.05 ug/L
	PCB-1232	< 0.05 ug/L
	PCB-1242	< 0.05 ug/L
	PCB-1248	< 0.05 ug/L
	PCB-1254	< 0.10 ug/L
	PCB-1260	< 0.10 ug/L
T100	Wet/Dry Stability	DONE
T75	Unconfined compressive strength	247 psi

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/17/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-74 B-6 (P113796) / TCLP LEACH F/T
NUS SAMPLE NO: P0116901
DATE SAMPLED :
DATE RECEIVED: 26-MAY-89
APPROVED BY: Joanne C. Simonic

TEST	DETERMINATION	RESULT	UNIT
9915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	< 0.05	ug/L
	PCB-1221	< 0.05	ug/L
	PCB-1232	< 0.05	ug/L
	PCB-1242	< 0.05	ug/L
	PCB-1248	< 0.05	ug/L
	PCB-1254	< 0.10	ug/L
	PCB-1260	< 0.10	ug/L

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-74 B-6 FH
NUS SAMPLE NO: P0113796
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Jeanne C. Simenic

TEST	DETERMINATION	RESULT	UNIT
$311	Freeze/Thaw Stability	DONE	
T75	Unconfined compressive strength	299	psi

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 08/07/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-50 B-6
NUS SAMPLE NO: P0119980
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
ACRW	Chromium	0.02	mg/L
ACUW	Copper	0.17	mg/L
APBW	Lead	< 0.05	mg/L
AZNW	Zinc	0.02	mg/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/22/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-53 B-6
NUS SAMPLE NO: P0113804
DATE SAMPLED: 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Siamic

TEST	DETERMINATION	RESULT	UNIT
16206	Percent Solids at 103C	83.4	%
OVPPS	PRIORITY POLLUTANT VOA - SOIL		
	1,1,1-Trichloroethane	<620	ug/kg
	1,1,2,2-Tetrachloroethane	<620	ug/kg
	1,1-Dichloroethane	<620	ug/kg
	1,1-Dichloroethene	<620	ug/kg
	1,2-Dichloroethane	<620	ug/kg
	1,2-Dichloroethene (total)	<620	ug/kg
	1,2-Dichloropropane	<620	ug/kg
	1,3-Dichloropropene (total	<620	ug/kg
	2-Chloroethylvinyl Ether	<1200	ug/kg
	Acrolein	<12,000	ug/kg
	Acrylonitrile	<12,000	ug/kg
	Benzene	<620	ug/kg
	Bromodichloromethane	<620	ug/kg
	Bromoform	<620	ug/kg
	Bromomethane	<1200	ug/kg
	Carbontetrachloride	<620	ug/kg
	Chlorobenzene	2000	ug/kg
	Chloroethane	<1200	ug/kg
	Chloroform	<620	ug/kg
	Chloromethane	<120	ug/kg
	Dibromochloromethane	<620	ug/kg
	Ethylbenzene	4200	ug/kg
	Methylene Chloride	1200 B	ug/kg
	Tetrachloroethene	<620	ug/kg
	Toluene	<620	ug/kg
	Trichloroethene	<620	ug/kg
	Trichlorofluoromethane	<620	ug/kg

CLIENT ORIGINAL

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
SAMPLE ID: H3-53 B-6
NUS SAMPLE NO: P0113B04

TEST	DETERMINATION	RESULT	UNIT
	Vinyl Chloride	<1200	ug/kg
	Xylenes (total)	34,000	ug/kg

COMMENTS: NOTE: The GC/MS results have not been corrected for % moisture.

CLIENT ORIGINAL

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LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-53 B-6 - ZHE EXT
NUS SAMPLE NO: P0114408
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
9914	Zero headspace extraction (ZHE)	DONE	
OVPPW	PRIORITY POLLUTANTS VOA - WATER		
	1,1 - Dichloroethane	<25	ug/L
	1,1 - Dichloroethene	<25	ug/L
	1,1,1 - Trichloroethane	<25	ug/L
	1,1,2,2-Tetrachloroethane	<25	ug/L
	1,1,2-Trichloroethane	<25	ug/L
	1,2 - Dichloroethane	<25	ug/L
	1,2 - Dichloroethene (Total)	<25	ug/L
	1,2 - Dichloropropane	<25	ug/L
	1,3 - Dichloropropene (Total)	<25	ug/L
	2-Chloroethylvinyl ether	<50	ug/L
	Acrolein	<500	ug/L
	Acrylonitrile	<500	ug/L
	Benzene	<25	ug/L
	Bromodichloromethane	<25	ug/L
	Bromoform	<25	ug/L
	Bromomethane	<50	ug/L
	Carbontetrachloride	<25	ug/L
	Chlorobenzene	58	ug/L
	Chloroethane	<50	ug/L
	Chloroform	<25	ug/L
	Chloromethane	<50	ug/L
	Dibromochloromethane	<25	ug/L
	Ethylbenzene	110	ug/L
	Methylene chloride	<25	ug/L
	Tetrachloroethene	<25	ug/L

CLIENT ORIGINAL

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
SAMPLE ID: H3-53 B-6 - ZHE EXT
NUS SAMPLE NO: P0114408

TEST	DETERMINATION	RESULT	UNIT
	Toluene	<25	ug/L
	Trichloroethene	<25	ug/L
	Trichlorofluoromethane	<25	ug/L
	Vinyl chloride	<50	ug/L
	Xylenes (total)	880	ug/L

COMMENTS. NOTE: VOA analysis was performed on 5-fold dilution of the sample due to the presence of a high concentration of xylenes.

LABORATORY_ANALYSIS_REPORT

CLIENT NAME:	ENVIRESPONSE, INC. GSA RARITAN DEPOT	NUS CLIENT NO:	0541 0001
ADDRESS:	WOODBRIDGE AVE/BLDG 209 BAY F EDISON, NJ 08837-0000	VENDOR NO:	06883502
	REPORT DATE: 06/21/89	WORK ORDER NO.	33830
ATTENTION:	MR. STEPHEN SAWYER		
CC:			

SAMPLE IDENTIFICATION: H3-65 B-6 DUP AS REC'D
NUS SAMPLE NO: P0113788
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
9150	pH (in water)	12.2	
9310	Acid Neutralization Capacity	DONE	
ACRS	Chromium	62.3	mg/kg
ACUS	Copper	66.3	mg/kg
APBS	Lead	187	mg/kg
AZNS	Zinc	82.3	mg/kg
0123	Total PCBs in soil		
	PCB-1260	82	ug/g
I620S	Percent Solids at 103C	78.1	%
T55	Moisture content	21.9	%
T70	Specific gravity ?-grn	2.51	g/cc
T75	Unconfined compressive strength	620	psi
T85	Bulk Density	1.80	g/cc

COMMENTS:

CLIENT ORIGINAL

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LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 53830

REPORT DATE: 06/21/89

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-66 B-6 DUP
NUS SAMPLE NO: P0113790
DATE SAMPLED: 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
T01	Falling Head Permeability	5.6x10-7	cc/sec

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-65 B-6 DUP TCLP LEACH
NUS SAMPLE NO: P0113789
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simonic

TEST	DETERMINATION	RESULT	UNIT
9915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.05	ug/L
	PCB-1221	<0.05	ug/L
	PCB-1232	<0.05	ug/L
	PCB-1242	<0.05	ug/L
	PCB-1248	<0.05	ug/L
	PCB-1254	<0.10	ug/L
	PCB-1260	0.12	ug/L

COMMENTS:

CLIENT ORIGINAL

15

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/17/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-70 B-6D (P113793) / TCLP LEACH F/T
NUS SAMPLE NO: P0116902
DATE SAMPLED :
DATE RECEIVED: 26-MAY-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
0915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	< 0.05	ug/L
	PCB-1221	< 0.05	ug/L
	PCB-1232	< 0.05	ug/L
	PCB-1242	< 0.05	ug/L
	PCB-1248	< 0.05	ug/L
	PCB-1254	< 0.10	ug/L
	PCB-1260	0.11	ug/L

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 04885502
WORK ORDER NO: 55030

SAMPLE IDENTIFICATION: H3-70 B-6 DUP 1 F/T
NUS SAMPLE NO: P0113793
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
6311	Freeze/Thaw Stability	DONE	
T75	Unconfined compressive strength	269	psi

COMMENTS:

CLIENT ORIGINAL

LABORATORY ANALYSIS REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-6B B-6 DUP
NUS SAMPLE NO: P0113807
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
IA208	Percent Solids at 103C	77.3	%
OVPPS	PRIORITY POLLUTANT VOA - SOIL		
	1,1,1-Trichloroethane	<620	ug/kg
	1,1,2,2-Tetrachloroethane	<620	ug/kg
	1,1-Dichloroethane	<620	ug/kg
	1,1-Dichloroethene	<620	ug/kg
	1,2-Dichloroethane	<620	ug/kg
	1,2-Dichloroethene (total)	<620	ug/kg
	1,2-Dichloropropane	<620	ug/kg
	1,3-Dichloropropene (total	<620	ug/kg
	2-Chloroethylvinyl Ether	<1200	ug/kg
	Acrolein	<12,000	ug/kg
	Acrylonitrile	<12,000	ug/kg
	Benzene	<620	ug/kg
	Bromodichloromethane	<620	ug/kg
	Bromoform	<620	ug/kg
	Bromomethane	<1200	ug/kg
	Carbontetrachloride	<620	ug/kg
	Chlorobenzene	1700	ug/kg
	Chloroethane	<1200	ug/kg
	Chloroform	<620	ug/kg
	Chloromethane	<1200	ug/kg
	Dibromochloromethane	<620	ug/kg
	Ethylbenzene	3000	ug/kg
	Methylene Chloride	<620	ug/kg
	Tetracloroethene	<620	ug/kg
	Toluene	<620	ug/kg

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
SAMPLE ID: H3-6B B-6 DUP
[illegible] SAMPLE NO: P0113807

TEST	DETERMINATION	RESULT	UNIT
	Trichloroethene	<620	ug/kg
	Trichlorofluoromethane	<620	ug/kg
	Vinyl Chloride	<1200	ug/kg
	Xylenes (total)	19,000	ug/kg

COMMENTS: NOTE: The GC/MS results have not been corrected for % moisture.

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 08/07/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-65 B-6D
NUS SAMPLE NO: P0119983
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
ACRW	Chromium	0.02	mg/L
ACUW	Copper	0.09	mg/L
APBW	Lead	< 0.05	mg/L
AZNW	Zinc	0.03	mg/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000

MUS CLIENT NO: 0541 0001

VENDOR NO: 06885502

REPORT DATE: 06/21/89

WORK ORDER NO: 55830

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-68 B-6 DUP - ZHE EXT
MUS SAMPLE NO: P0114411
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
9914	Zero headspace extraction (ZHE)	DONE	
OVPPW	PRIORITY POLLUTANTS VOA - WATER		
	1,1 - Dichloroethane	<12	ug/L
	1,1 - Dichloroethene	<12	ug/L
	1,1,1 - Trichloroethane	<12	ug/L
	1,1,2,2-Tetrachloroethane	<12	ug/L
	1,1,2-Trichloroethane	<12	ug/L
	1,2 - Dichloroethane	<12	ug/L
	1,2 - Dichloroethene (Total)	<12	ug/L
	1,2 - Dichloropropane	<12	ug/L
	1,3 - Dichloropropene (Total)	<12	ug/L
	2-Chloroethylvinyl ether	<25	ug/L
	Acrolein	<250	ug/L
	Acrylonitrile	<250	ug/L
	Benzene	<12	ug/L
	Bromodichloromethane	<12	ug/L
	Bromoform	<12	ug/L
	Bromomethane	<25	ug/L
	Carbontetrachloride	<12	ug/L
	Chlorobenzene	58	ug/L
	Chloroethane	<25	ug/L
	Chloroform	<12	ug/L
	Chloromethane	<25	ug/L
	Dibromochloromethane	<12	ug/L
	Ethylbenzene	96	ug/L
	Methylene chloride	<12	ug/L
	Tetrachloroethene	<12	ug/L

CLIENT ORIGINAL

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
SAMPLE ID: H3-68 B-6 DUP - ZHE EXT
NUS SAMPLE NO: P0114411

TEST	DETERMINATION	RESULT	UNIT
	Toluene	<12	ug/L
	Trichloroethene	<12	ug/L
	Trichlorofluoromethane	<12	ug/L
	Vinyl chloride	<25	ug/L
	Xylenes (total)	690	ug/L

COMMENTS: NOTE: VOA analysis was perfomed on a 2.5-fold dilution of the sample due to the presence of a high concentration of xylenes.

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89

NUS CLIENT NO: 0541 0001

VENDOR NO: 06885502
WORK ORDER NO: 55830

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-54 B-7 - AS REC'D
NUS SAMPLE NO: P0113780
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT UNIT
S150	pH (in water)	12.1
S310	Acid Neutralization Capacity	DONE
ACRS	Chromium	56.4 mg/kg
ACUS	Copper	35.0 mg/kg
APBS	Lead	78.8 mg/kg
AZNS	Zinc	88.0 mg/kg
S123	Total PCBs in soil PCB-1260	89 ug/g
I620S	Percent Solids at 103C	82.5 %
T55	Moisture content	17.4 %
T70	Specific gravity f-grn	2.51 g/cc
T75	Unconfined compressive strength	841 psi
T85	Bulk Density	1.96 g/cc

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001

VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-55 B-7
NUS SAMPLE NO: P0113799
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
T01	Falling Head Permability	7.0x10-9	cc/sec

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89

NUS CLIENT NO: 0541 0001

VENDOR NO: 06885502
WORK ORDER NO: 55830

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-54 B-7 - TCLP LEACH
NUS SAMPLE NO: P0113781
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
0915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.05	ug/L
	PCB-1221	<0.05	ug/L
	PCB-1232	<0.05	ug/L
	PCB-1242	<0.05	ug/L
	PCB-1248	<0.05	ug/L
	PCB-1254	<0.10	ug/L
	PCB-1260	<0.10	ug/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/17/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-77 B-7 (P113802) / TCLP LEACH P/T
NUS SAMPLE NO: P0116903
DATE SAMPLED :
DATE RECEIVED: 26-MAY-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
0915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	< 0.05	ug/L
	PCB-1221	< 0.05	ug/L
	PCB-1232	< 0.05	ug/L
	PCB-1242	< 0.05	ug/L
	PCB-1248	< 0.05	ug/L
	PCB-1254	< 0.10	ug/L
	PCB-1260	< 0.10	ug/L

COMMENTS:

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LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 33830

SAMPLE IDENTIFICATION: H3-77 B-7 FK
NUS SAMPLE NO: P0113802
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
6311	Freeze/Thaw Stability	DONE	
T75	Unconfined compressive strength	61	psi

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

REPORT DATE: 06/17/89

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-77B-7C (P113803) / TCLP LEACH F/T Control
NUS SAMPLE NO: P0116912
DATE SAMPLED :
DATE RECEIVED: 26-MAY-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT UNIT
8915	TCLP Extraction	DONE
0122	PRIORITY POLLUTANTS - PCBS	
	PCB-1016	< 0.05 ug/L
	PCB-1221	< 0.05 ug/L
	PCB-1232	< 0.05 ug/L
	PCB-1242	< 0.05 ug/L
	PCB-1248	< 0.05 ug/L
	PCB-1254	< 0.10 ug/L
	PCB-1260	0.12 ug/L

COMMENTS:

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LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89

NUS CLIENT NO: 0541 0001

VENDOR NO: 06885502
WORK ORDER NO: 55830

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-77 B-7
NUS SAMPLE NO: P0113803
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
$311	Freeze/Thaw Stability	DONE	
T75	Unconfined compressive strength	237	psi

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000

NUS CLIENT NO: 0541 0001

VENDOR NO: 06885502
WORK ORDER NO: 55830

REPORT DATE: 06/21/89

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-57 B-7
NUS SAMPLE NO: P0113805
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
16208	Percent Solids at 103C	78.8	%
OVPPS	PRIORITY POLLUTANT VOA - SOIL		
	1,1,1-Trichloroethane	<620	ug/kg
	1,1,2,2-Tetrachloroethane	<620	ug/kg
	1,1-Dichloroethane	<620	ug/kg
	1,1-Dichloroethene	<620	ug/kg
	1,2-Dichloroethane	<620	ug/kg
	1,2-Dichloroethene (total)	<620	ug/kg
	1,2-Dichloropropane	<620	ug/kg
	1,3-Dichloropropene (total	<620	ug/kg
	2-Chloroethylvinyl Ether	<1200	ug/kg
	Acrolein	<12,000	ug/kg
	Acrylonitrile	<12,000	ug/kg
	Benzene	<620	ug/kg
	Bromodichloromethane	<620	ug/kg
	Bromoform	<620	ug/kg
	Bromomethane	<1200	ug/kg
	Carbontetrachloride	<620	ug/kg
	Chlorobenzene	2900	ug/kg
	Chloroethane	<1200	ug/kg
	Chloroform	<620	ug/kg
	Chloromethane	<1200	ug/kg
	Dibromochloromethane	<620	ug/kg
	Ethylbenzene	5700	ug/kg
	Methylene Chloride	<620	ug/kg
	Tetrachloroethene	<620	ug/kg
	Toluene	<620	ug/kg

CLIENT ORIGINAL

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
SAMPLE ID: H3-57 B-7
NUS SAMPLE NO: P0113005

TEST	DETERMINATION	RESULT	UNIT
	Trichloroethene	<620	ug/kg
	Trichlorofluoromethane	<620	ug/kg
	Vinyl Chloride	<1200	ug/kg
	Xylenes (total)	36,000	ug/kg

COMMENTS: NOTE: The GC/MS results have not been corrected for % moisture.

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 08/07/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-54 B-7
NUS SAMPLE NO: P0119981
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
ACRM	Chromium	0.01	mg/L
ACUM	Copper	0.03	mg/L
APBM	Lead	< 0.05	mg/L
AZNM	Zinc	0.02	mg/L

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55860

SAMPLE IDENTIFICATION: H3-57 B-7 - ZHE EXT
NUS SAMPLE NO: P0114409
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
9914	Zero headspace extraction (ZHE)	DONE	
OVPPW	PRIORITY POLLUTANTS VOA - WATER		
	1,1 - Dichloroethane	<25	ug/L
	1,1 - Dichloroethene	<25	ug/L
	1,1,1 - Trichloroethane	<25	ug/L
	1,1,2,2-Tetrachloroethane	<25	ug/L
	1,1,2-Trichloroethane	<25	ug/L
	1,2 - Dichloroethane	<25	ug/L
	1,2 - Dichloroethene (Total)	<25	ug/L
	1,2 - Dichloropropane	<25	ug/L
	1,3 - Dichloropropene (Total)	<25	ug/L
	2-Chloroethylvinyl ether	<50	ug/L
	Acrolein	<500	ug/L
	Acrylonitrile	<500	ug/L
	Benzene	<25	ug/L
	Bromodichloromethane	<25	ug/L
	Bromoform	<25	ug/L
	Bromomethane	<50	ug/L
	Carbontetrachloride	96	ug/L
	Chlorobenzene	<25	ug/L
	Chloroethane	<50	ug/L
	Chloroform	<25	ug/L
	Chloromethane	<50	ug/L
	Dibromochloromethane	<25	ug/L
	Ethylbenzene	190	ug/L
	Methylene chloride	<25	ug/L
	Tetrachloroethene	<25	ug/L

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
SAMPLE ID: H3-57 B-7 - ZHE EXT
NUS SAMPLE NO: P0114409

TEST	DETERMINATION	RESULT	UNIT
	Toluene	<25	ug/L
	Trichloroethene	<25	ug/L
	Trichlorofluoromethane	<25	ug/L
	Vinyl chloride	<50	ug/L
	Xylenes (total)	1200	ug/L

COMMENTS: NOTE: VOA analysis was performed on 5-fold dilution of the sample due to the presence of a high concentration of xylenes.

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89

NUS CLIENT NO: 0541 0001

VENDOR NO: 06885502
WORK ORDER NO: 55830

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-58 B-8 - AS REC'D
NUS SAMPLE NO: P0113782
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
$150	pH (in water)	11.9	
$310	Acid Neutralization Capacity	DONE	
ACRS	Chromium	48.9	mg/kg
ACUS	Copper	9.4	mg/kg
APBS	Lead	38.5	mg/kg
AZNS	Zinc	25.1	mg/kg
Q123	Total PCBs in soil PCB-1260	20	ug/g
I620S	Percent Solids at 103C	79.8	%
T55	Moisture content	18.2	%
T70	Specific gravity f-grn	2.57	g/cc
T75	Unconfined compressive strength	649	psi
T85	Bulk Density	1.96	g/cc

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-59 B-8
NUS SAMPLE NO: P0113784
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
T01	Falling Head Permability	5.0x10-8	cc/sec

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-58 B-B - TCLP LEACH
NUS SAMPLE NO: P0113783
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
9915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.05	ug/L
	PCB-1221	<0.05	ug/L
	PCB-1232	<0.05	ug/L
	PCB-1242	<0.05	ug/L
	PCB-1248	<0.05	ug/L
	PCB-1254	<0.10	ug/L
	PCB-1260	0.13	ug/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 08/07/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-58 B-8
NUS SAMPLE NO: P0119982
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
ACRM	Chromium	0.02	mg/L
ACUM	Copper	0.03	mg/L
APBM	Lead	0.13	mg/L
AZNM	Zinc	0.02	mg/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO. 55830

SAMPLE IDENTIFICATION: H3-61 B-8
NUS SAMPLE NO: P0113806
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
I620S	Percent Solids at 103C	82.0	%
DVPPS	PRIORITY POLLUTANT VOA - SOIL		
	1,1,1-Trichloroethane	<620	ug/kg
	1,1,2,2-Tetrachloroethane	<620	ug/kg
	1,1-Dichloroethane	<620	ug/kg
	1,1-Dichloroethene	<620	ug/kg
	1,2-Dichloroethane	<620	ug/kg
	1,2-Dichloroethene (total)	<620	ug/kg
	1,2-Dichloropropane	<620	ug/kg
	1,3-Dichloropropene (total	<620	ug/kg
	2-Chloroethylvinyl Ether	<1200	ug/kg
	Acrolein	<12,000	ug/kg
	Acrylonitrile	<12,000	ug/kg
	Benzene	<620	ug/kg
	Bromodichloromethane	<620	ug/kg
	Bromoform	<620	ug/kg
	Bromomethane	<1200	ug/kg
	Carbontetrachloride	<620	ug/kg
	Chlorobenzene	780	ug/kg
	Chloroethane	<1200	ug/kg
	Chloroform	<620	ug/kg
	Chloromethane	<1200	ug/kg
	Dibromochloromethane	<620	ug/kg
	Ethylbenzene	1300	ug/kg
	Methylene Chloride	<620	ug/kg
	Tetrachloroethene	<620	ug/kg
	Toluene	<620	ug/kg

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
SAMPLE ID: HO-61 B-B
NUS SAMPLE NO: P0113806

TEST	DETERMINATION	RESULT	UNIT
	Trichloroethene	<620	ug/kg
	Trichlorofluoromethane	<620	ug/kg
	Vinyl Chloride	<1200	ug/kg
	Xylenes (total)	8300	ug/kg

COMMENTS: NOTE: The GC/MS results have not been corrected for % moisture.

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0341 0001
VENDOR NO: 06883302
WORK ORDER NO: 33830

SAMPLE IDENTIFICATION: H3-61 B-B - ZHE EXT
NUS SAMPLE NO: P0114410
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simenic

TEST	DETERMINATION	RESULT	UNIT
0914	Zero headspace extraction (ZHE)	DONE	
OVPPW	PRIORITY POLLUTANTS VOA - WATER		
	1,1 - Dichloroethane	<12	ug/L
	1,1 - Dichloroethene	<12	ug/L
	1,1,1 - Trichloroethane	<12	ug/L
	1,1,2,2-Tetrachloroethane	<12	ug/L
	1,1,2-Trichloroethane	<12	ug/L
	1,2 - Dichloroethane	<12	ug/L
	1,2 - Dichloroethene (Total)	<12	ug/L
	1,2 - Dichloropropane	<12	ug/L
	1,3 - Dichloropropene (Total)	<12	ug/L
	2-Chloroethylvinyl ether	<25	ug/L
	Acrolein	<250	ug/L
	Acrylonitrile	<250	ug/L
	Benzene	<12	ug/L
	Bromodichloromethane	<12	ug/L
	Bromoform	<12	ug/L
	Bromomethane	<25	ug/L
	Carbontetrachloride	<12	ug/L
	Chlorobenzene	44	ug/L
	Chloroethane	<25	ug/L
	Chloroform	<12	ug/L
	Chloromethane	<25	ug/L
	Dibromochloromethane	<12	ug/L
	Ethylbenzene	73	ug/L
	Methylene chloride	<12	ug/L
	Tetrachloroethene	<12	ug/L

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
SAMPLE ID: H3-61 8-8 - ZHE EXT
NUS SAMPLE NO: P0114410

TEST	DETERMINATION	RESULT	UNIT
	Toluene	<12	ug/L
	Trichloroethene	<12	ug/L
	Trichlorofluoromethane	<12	ug/L
	Vinyl chloride	<25	ug/L
	Xylenes (total)	510	ug/L

COMMENTS: NOTE: VOA analysis was performed on a 2.5-fold dilution of the sample due to the presence of a high concentration of xylenes.

CLIENT ORIGINAL

(12)

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-62 B-9 - AG REC'D
NUS SAMPLE NO: P0113785
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Jeanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
9150	pH (in water)	12.0	
9310	Acid Neutralization Capacity	DONE	
ACRS	Chromium	34.7	mg/kg
ACUS	Copper	5.5	mg/kg
APBS	Lead	16.2	mg/kg
AZNS	Zinc	7.8	mg/kg
0123	Total PCBs in soil	<1.0	ug/g
I6205	Percent Solids at 103C	79.5	%
T55	Moisture content	18.4	%
T70	Specific gravity f-grn	2.57	g/cc
T75	Unconfined compressive strength	786	psi
T85	Bulk Density	1.92	g/cc

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

REPORT DATE: 06/21/89

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-63 8-9
NUS SAMPLE NO: P0113787
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
T01	Falling Head Permability	1.8x10-7	cc/sec

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06805002
WORK ORDER NO: 53830

SAMPLE IDENTIFICATION: H3-62 B-9 - TCLP LEACH
NUS SAMPLE NO: P0113786
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 10-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
0915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.05	ug/L
	PCB-1221	<0.05	ug/L
	PCB-1232	<0.05	ug/L
	PCB-1242	<0.05	ug/L
	PCB-1248	<0.05	ug/L
	PCB-1254	<0.10	ug/L
	PCB-1260	<0.10	ug/L

COMMENTS

CLIENT ORIGINAL

1.

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/17/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06080502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-B3 B-9 (P113816) / TCLP LEACH F/T
NUS SAMPLE NO: P0116904
DATE SAMPLED :
DATE RECEIVED: 26-MAY-89
APPROVED BY: Joanne C. Slamnic

TEST	DETERMINATION	RESULT UNIT
9915	TCLP Extraction	DONE
0122	PRIORITY POLLUTANTS - PCBS	
	PCB-1016	< 0.05 ug/L
	PCB-1221	< 0.05 ug/L
	PCB-1232	< 0.05 ug/L
	PCB-1242	< 0.05 ug/L
	PCB-1248	< 0.05 ug/L
	PCB-1254	< 0.10 ug/L
	PCB-1260	< 0.10 ug/L

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-63 B-9
NUS SAMPLE NO: P0113816
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
S311	Freeze/Thaw Stability	DONE	
T73	Unconfined compressive strength	*	

COMMENTS: * Unable to run unconfined compression. During freeze/thaw test, sample deteriorated from cylindrical form.

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000

NUS CLIENT NO: 0541 0001

VENDOR NO: 06885502
WORK ORDER NO: 55830

REPORT DATE: 06/21/89

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-38 B-21 AS REC'D
NUS SAMPLE NO: P0113684
DATE SAMPLED : 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
9150	pH (in water)	12.0	
9310	Acid Neutralization Capacity	DONE	
G123	Total PCBs in soil PCB-1260	80	ug/g
I620S	Percent Solids at 103C	82.3	%
T55	Moisture content	15.6	%
T70	Specific gravity f-grn	2.57	g/cc
T75	Unconfined compressive strength	1,555	psi
T85	Bulk Density	1.90	g/cc

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 53830

SAMPLE IDENTIFICATION: H3-40 B-21
NUS SAMPLE NO: P0113686
DATE SAMPLED : 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
T01	Falling Head Permability	4.5x10-9	cc/sec

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-38 B-21 TCLP LEACH
NUS SAMPLE NO: P0113685
DATE SAMPLED : 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
#915	TCLP Extraction	DONE	
G122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.05	ug/L
	PCB-1221	<0.05	ug/L
	PCB-1232	<0.05	ug/L
	PCB-1242	<0.05	ug/L
	PCB-1248	<0.05	ug/L
	PCB-1254	<0.10	ug/L
	PCB-1260	0.13	ug/L

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-42 B-21 w/D
NUS SAMPLE NO: P0113687
DATE SAMPLED : 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
#915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	< 0.05	ug/L
	PCB-1221	< 0.05	ug/L
	PCB-1232	< 0.05	ug/L
	PCB-1242	< 0.05	ug/L
	PCB-1248	< 0.05	ug/L
	PCB-1254	< 0.10	ug/L
	PCB-1260	0.36	ug/L
T100	Wet/Dry Stability	DONE	
T75	Unconfined compressive strength	347	psi

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-43 B-21 F/T
NUS SAMPLE NO: P0113689
DATE SAMPLED : 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
$311	Freeze/Thaw Stability	DONE	
T65	Permeability with back pressure saturation	1.7x10-7	cc/sec

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000

NUS CLIENT NO: 0541 0001

VENDOR NO: 06885502
REPORT DATE: 06/21/89
WORK ORDER NO: 55830

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-48 B-22
NUS SAMPLE NO: P0113696
DATE SAMPLED : 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
$150	pH (in water)	11.8	
$310	Acid Neutralization Capacity	DONE	
9123	Total PCBs in soil		
	PCB-1260	180	ug/g
I620S	Percent Solids at 103C	80.5	%
T55	Moisture content	19.7	%
T70	Specific gravity f-grn	2.52	g/cc
T75	Unconfined compressive strength	521	psi
T85	Bulk Density	1.88	g/cc

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-47 B-22
NUS SAMPLE NO: F0113695
DATE SAMPLED : 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
T01	Falling Head Permability	1.3x10-8	cc/sec

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55630

SAMPLE IDENTIFICATION: H3-48 B-22 TCLP LEACH
NUS SAMPLE NO: P0113697
DATE SAMPLED : 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
0915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.05	ug/L
	PCB-1221	<0.05	ug/L
	PCB-1232	<0.05	ug/L
	PCB-1242	<0.05	ug/L
	PCB-1248	<0.05	ug/L
	PCB-1254	<0.10	ug/L
	PCB-1260	0.16	ug/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000

REPORT DATE: 06/17/89

NUS CLIENT NO: 0541 0001

VENDOR NO: 06885502
WORK ORDER NO: 33830

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: HO-46 B-22 (P113694) / TCLP LEACH F/T 75t
NUS SAMPLE NO: P0116905
DATE SAMPLED :
DATE RECEIVED: 26-MAY-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
0915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	< 0.05	ug/L
	PCB-1221	< 0.05	ug/L
	PCB-1232	< 0.05	ug/L
	PCB-1242	< 0.05	ug/L
	PCB-1248	< 0.05	ug/L
	PCB-1254	< 0.10	ug/L
	PCB-1260	0.41	ug/L

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-46 B-22
NUS SAMPLE NO: P0113694
DATE SAMPLED : 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
S311	Freeze/Thaw Stability	DONE	
T75	Unconfined compressive strength	354	psi

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/17/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 53830

SAMPLE IDENTIFICATION: H3-45 B-22C (P113693) / TCLP LEACH
NUS SAMPLE NO: P0116913
DATE SAMPLED :
DATE RECEIVED: 26-MAY-89
APPROVED BY: Joanne C. Simanic

F/T Control

TEST	DETERMINATION	RESULT	UNIT
0915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	< 0.05	ug/L
	PCB-1221	< 0.05	ug/L
	PCB-1232	< 0.05	ug/L
	PCB-1242	< 0.05	ug/L
	PCB-1248	< 0.05	ug/L
	PCB-1254	< 0.10	ug/L
	PCB-1260	0.28	ug/L

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-45 8-22
NUS SAMPLE NO: P0113693
DATE SAMPLED: 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
K311	Freeze/Thaw Stability	DONE	
T75	Unconfined compressive strength	108	psi

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885302
WORK ORDER NO: 35830

SAMPLE IDENTIFICATION: HO-37 (RINSATE)
NUS SAMPLE NO: P0113A03
DATE SAMPLED : 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
0150	pH (in water)	9.0	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.5	ug/L
	PCB-1221	<0.5	ug/L
	PCB-1232	<0.5	ug/L
	PCB-1242	<0.5	ug/L
	PCB-1248	<0.5	ug/L
	PCB-1254	<1.0	ug/L
	PCB-1260	<1.0	ug/L

COMMENTS

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06805502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-78 B-7EW Recycle Water
NUS SAMPLE NO: P0113809
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.5	ug/L
	PCB-1221	<0.5	ug/L
	PCB-1232	<0.5	ug/L
	PCB-1242	<0.5	ug/L
	PCB-1248	<0.5	ug/L
	PCB-1254	<1.0	ug/L
	PCB-1260	<1.0	ug/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 59830

SAMPLE IDENTIFICATION: H3-85 RINSATE
NUS SAMPLE NO: P0113818
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.5	ug/L
	PCB-1221	<0.5	ug/L
	PCB-1232	<0.5	ug/L
	PCB-1242	<0.5	ug/L
	PCB-1248	<0.5	ug/L
	PCB-1254	<1.0	ug/L
	PCB-1260	4.7	ug/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89

NUS CLIENT NO: 0541 0001

VENDOR NO: 06885502
WORK ORDER NO: 55830

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-B6 TRIP BLANK
NUS SAMPLE NO: P0113808
DATE SAMPLED : 07-APR-89
DATE RECEIVED: 08-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
OVPPW	PRIORITY POLLUTANTS VOA - WATER		
	1,1 - Dichloroethane	<5	ug/L
	1,1 - Dichloroethene	<5	ug/L
	1,1,1 - Trichloroethane	<5	ug/L
	1,1,2,2-Tetrachloroethane	<5	ug/L
	1,1,2-Trichloroethane	<5	ug/L
	1,2 - Dichloroethane	<5	ug/L
	1,2 - Dichloroethene (Total)	<5	ug/L
	1,2 - Dichloropropane	<5	ug/L
	1,3 - Dichloropropene (Total)	<5	ug/L
	2-Chloroethylvinyl ether	<10	ug/L
	Acrolein	<100	ug/L
	Acrylonitrile	<100	ug/L
	Benzene	<5	ug/L
	Bromodichloromethane	<5	ug/L
	Bromoform	<5	ug/L
	Bromomethane	<10	ug/L
	Carbontetrachloride	<5	ug/L
	Chlorobenzene	<5	ug/L
	Chloroethane	<10	ug/L
	Chloroform	<5	ug/L
	Chloromethane	<10	ug/L
	Dibromochloromethane	<5	ug/L
	Ethylbenzene	<5	ug/L
	Methylene chloride	<5	ug/L
	Tetrachloroethene	<5	ug/L
	Toluene	<5	ug/L
	Trichloroethene	<5	ug/L

CLIENT ORIGINAL

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
SAMPLE ID: HG-06 TRIP BLANK
NUS SAMPLE NO: P0113808

TEST	DETERMINATION	RESULT	UNIT
	Trichlorofluoromethane	<5	ug/L
	Vinyl chloride	<10	ug/L
	Xylenes (total)	<5	ug/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 05/09/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO. 06885502
WORK ORDER NO 55830

SAMPLE IDENTIFICATION: H3-87 CORE DRUM #H3-1
NUS SAMPLE NO: P0113958
DATE SAMPLED : 09-APR-89
DATE RECEIVED: 11-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
0123	Total PCBs in soil	<3.6	ug/g
16206	Percent Solids at 103C	93.9	%

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 05/09/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 59830

SAMPLE IDENTIFICATION: H3-88
NUS SAMPLE NO: P0113939
DATE SAMPLED : 09-APR-89
DATE RECEIVED: 11-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
I620S	Percent Solids at 103C	79.9	%
OVPPS	PRIORITY POLLUTANT VOA - SOIL		
	1,1,1-Trichloroethane	<620	ug/L
	1,1,2,2-Tetrachloroethane	<620	ug/L
	1,1-Dichloroethane	<620	ug/L
	1,1-Dichloroethene	<620	ug/L
	1,2-Dichloroethane	<620	ug/L
	1,2-Dichloroethene (total)	<620	ug/L
	1,2-Dichloropropane	<620	ug/L
	1,3-Dichloropropene (total	<620	ug/L
	2-Chloroethylvinylether	<1200	ug/L
	Acetone	3300	ug/L
	Acrolein	<12,000	ug/L
	Acrylonitrile	<12,000	ug/L
	Benzene	<620	ug/L
	Bromodichloromethane	<620	ug/L
	Bromoform	<620	ug/L
	Bromomethane	<1200	ug/L
	Carbontetrachloride	<620	ug/L
	Chlorobenzene	1300	ug/L
	Chloroethane	<1200	ug/L
	Chloroform	<620	ug/L
	Chloromethane	<1200	ug/L
	Dibromochloromethane	<620	ug/L
	Ethylbenzene	2300	ug/L
	Methylene chloride	<620	ug/L
	Tetrachloroethene	<620	ug/L

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 05/09/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-89 TRIP BLANKS
NUS SAMPLE NO: P0113960
DATE SAMPLED : 09-APR-89
DATE RECEIVED: 11-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
DVPPW	PRIORITY POLLUTANTS VOA - WATER		
	1,1 - Dichloroethane	<5	ug/L
	1,1 - Dichloroethene	<5	ug/L
	1,1,1 - Trichloroethane	<5	ug/L
	1,1,2,2-Tetrachloroethane	<5	ug/L
	1,1,2-Trichloroethane	<5	ug/L
	1,2 - Dichloroethane	<5	ug/L
	1,2 - Dichloroethene (Total)	<5	ug/L
	1,2 - Dichloropropane	<5	ug/L
	1,3 - Dichloropropene (Total)	<5	ug/L
	2-Chloroethylvinyl ether	<10	ug/L
	Acrolein	<100	ug/L
	Acrylonitrile	<100	ug/L
	Benzene	<5	ug/L
	Bromodichloromethane	<5	ug/L
	Bromoform	<5	ug/L
	Bromomethane	<10	ug/L
	Carbontetrachloride	<5	ug/L
	Chlorobenzene	<5	ug/L
	Chloroethane	<10	ug/L
	Chloroform	<5	ug/L
	Chloromethane	<10	ug/L
	Dibromochloromethane	<5	ug/L
	Ethylbenzene	<5	ug/L
	Methylene chloride	<5	ug/L
	Tetrachloroethene	<5	ug/L
	Toluene	<5	ug/L
	Trichloroethene	<5	ug/L

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
SAMPLE ID: H3-88
NUS SAMPLE NO: P0113959

TEST	DETERMINATION	RESULT	UNIT
	Toluene	<620	ug/L
	Trichloroethene	<620	ug/L
	Trichlorofluoromethane	<620	ug/L
	Vinyl chloride	<1200	ug/L
	Xylenes (total)	14,000	ug/L

COMMENTS:

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
SAMPLE ID: HO-89 TRIP BLANKS
NUS SAMPLE NO: P0113960

TEST	DETERMINATION	RESULT	UNIT
	Trichlorofluoromethane	<5	ug/L
	Vinyl chloride	<10	ug/L

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 05/09/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06805502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-90 DRUM #H3-2
NUS SAMPLE NO: P0113961
DATE SAMPLED : 09-APR-89
DATE RECEIVED: 11-APR-89
APPROVED BY: Joanne C. Simonic

TEST	DETERMINATION	RESULT	UNIT
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.5	ug/L
	PCB-1221	<0.5	ug/L
	PCB-1232	<0.5	ug/L
	PCB-1242	<0.5	ug/L
	PCB-1248	<0.5	ug/L
	PCB-1254	<1.0	ug/L
	PCB-1260	4.7	ug/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 05/09/89

NUS CLIENT NO: 0541 0001

VENDOR NO: 06885502
WORK ORDER NO: 55830

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-91 DRUM #H3-3
NUS SAMPLE NO: P0113962
DATE SAMPLED : 09-APR-89
DATE RECEIVED: 11-APR-89
APPROVED BY: Jeanne C. Simonic

TEST	DETERMINATION	RESULT	UNIT
8122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.5	ug/L
	PCB-1221	<0.5	ug/L
	PCB-1232	<0.5	ug/L
	PCB-1242	<0.5	ug/L
	PCB-1248	<0.5	ug/L
	PCB-1254	<1.0	ug/L
	PCB-1260	2.1	ug/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 05/09/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06880002
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-92 DRUM #H3-4
NUS SAMPLE NO: P0113963
DATE SAMPLED : 09-APR-89
DATE RECEIVED: 11-APR-89
APPROVED BY: Joanne C. Siesnic

TEST	DETERMINATION	RESULT	UNIT
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.5	ug/L
	PCB-1221	<0.5	ug/L
	PCB-1232	<0.5	ug/L
	PCB-1242	<0.5	ug/L
	PCB-1248	<0.5	ug/L
	PCB-1254	<1.0	ug/L
	PCB-1260	2.5	ug/L

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 05/09/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 7541 0001
VENDOR ID 26855902
WORK ORDER NO: 15830

SAMPLE IDENTIFICATION: H3-93 DRUM #43-5
NUS SAMPLE NO: P0113964
DATE SAMPLED : 09-APR-89
DATE RECEIVED: 11-APR-89
APPROVED BY: Joanne C. Slavnic

TEST	DETERMINATION	RESULT	UNIT
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.5	ug/L
	PCB-1221	<0.5	ug/L
	PCB-1232	<0.5	ug/L
	PCB-1242	<0.5	ug/L
	PCB-1248	<0.5	ug/L
	PCB-1254	<1.0	ug/L
	PCB-1260	1.0	ug/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 05/09/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO 2541 0001
VENDOR NO 06005502
WORK ORDER NO 15830

SAMPLE IDENTIFICATION: H3-94 DRUM #H3-6
NUS SAMPLE NO: P0113965
DATE SAMPLED : 09-APR-89
DATE RECEIVED: 11-APR-89
APPROVED BY: Joanne C. Simonic

TEST	DETERMINATION	RESULT	UNIT
8122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.5	ug/L
	PCB-1221	<0.5	ug/L
	PCB-1232	<0.5	ug/L
	PCB-1242	<0.5	ug/L
	PCB-1248	<0.5	ug/L
	PCB-1254	<1.0	ug/L
	PCB-1260	9.1	ug/L

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 05/09/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55630

SAMPLE IDENTIFICATION: H3-95 DRUM #H3-7
NUS SAMPLE NO: P0113966
DATE SAMPLED : 09-APR-89
DATE RECEIVED: 11-APR-89
APPROVED BY: Jeanne C. Simenic

TEST	DETERMINATION	RESULT	UNIT
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.5	ug/L
	PCB-1221	<0.5	ug/L
	PCB-1232	<0.5	ug/L
	PCB-1242	<0.5	ug/L
	PCB-1248	<0.5	ug/L
	PCB-1254	<1.0	ug/L
	PCB-1260	<1.0	ug/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/03/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 33830

SAMPLE IDENTIFICATION: H3-B C-1
NUS SAMPLE NO: P0113463
DATE SAMPLED : 04-APR-89
DATE RECEIVED: 05-APR-89
APPROVED BY: Jeanne C. Simonic

TEST	DETERMINATION	RESULT	UNIT
S150	pH (in water)	12.0	
S310	Acid Neutralization Capacity	DONE	
0123	Total PCBs in soil		
	PCB-1260	17	ug/g
I6208	Percent Solids at 103C	82.7	%
T55	Moisture content	17.7	%
T70	Specific gravity f-grn	2.94	g/cc
T75	Unconfined compressive strength	1,703	psi
T85	Bulk Density	2.17	g/cc

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/05/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 04085302
WORK ORDER NO: 35830

SAMPLE IDENTIFICATION: H3-9 C-1
NUS SAMPLE NO: P0113464
DATE SAMPLED : 04-APR-89
DATE RECEIVED: 05-APR-89
APPROVED BY: Jeanne C. Siemnic

TEST	DETERMINATION	RESULT	UNIT
T01	Falling Head Permeability	5.7x10-9	cc/sec

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000

NUS CLIENT NO: 0541 000I

VENDOR NO: 06805502
WORK ORDER NO: 55830

REPORT DATE: 06/21/89

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-B C-1
NUS SAMPLE NO: P0113526
DATE SAMPLED : 04-APR-89
DATE RECEIVED: 05-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
9915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.05	ug/L
	PCB-1221	<0.05	ug/L
	PCB-1232	<0.05	ug/L
	PCB-1242	<0.05	ug/L
	PCB-1248	<0.05	ug/L
	PCB-1254	<0.10	ug/L
	PCB-1260	<0.10	ug/L

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000

REPORT DATE: 06/05/89

NUS CLIENT NO: 0541 0001

VENDOR NO: 06885302
WORK ORDER NO: 55830

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-B C-1
NUS SAMPLE NO: P0113526
DATE SAMPLED : 04-APR-89
DATE RECEIVED: 05-APR-89
APPROVED BY: Jeanne C. Simonic

TEST	DETERMINATION	RESULT	UNIT
0915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.05	ug/L
	PCB-1221	<0.05	ug/L
	PCB-1232	<0.05	ug/L
	PCB-1242	<0.05	ug/L
	PCB-1248	<0.05	ug/L
	PCB-1254	<0.10	ug/L
	PCB-1260	<0.10	ug/L

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000

NUS CLIENT NO: 0341 0001
VENDOR NO: 06865502
REPORT DATE: 06/17/89
WORK ORDER NO: 55830

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-12 C-1 (P113532) / TCLP LEACH F/T
NUS SAMPLE NO: P0116906
DATE SAMPLED :
DATE RECEIVED: 26-MAY-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
8915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	< 0.05	ug/L
	PCB-1221	< 0.05	ug/L
	PCB-1232	< 0.05	ug/L
	PCB-1242	< 0.05	ug/L
	PCB-1248	< 0.05	ug/L
	PCB-1254	< 0.10	ug/L
	PCB-1260	< 0.10	ug/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/14/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-12 C-1
NUS SAMPLE NO: P0113532
DATE SAMPLED : 05-APR-89
DATE RECEIVED: 06-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
9311	Freeze/Thaw Stability	DONE	
T75	Unconfined compressive strength	204	psi

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/05/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 04885502
WORK ORDER NO: 39830

SAMPLE IDENTIFICATION: HO-7 C-1 RECYCLE DRILLING CORE WATER
NUS SAMPLE NO: P0113462
DATE SAMPLED : 04-APR-89
DATE RECEIVED: 05-APR-89
APPROVED BY: Joanne C. Simonic

TEST	DETERMINATION	RESULT	UNIT
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.5	ug/L
	PCB-1221	<0.5	ug/L
	PCB-1232	<0.5	ug/L
	PCB-1242	<0.5	ug/L
	PCB-1248	<0.5	ug/L
	PCB-1254	<1.0	ug/L
	PCB-1260	23	ug/L

COMMENTS:

CLIENT ORIGINAL

1.

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/05/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 04885002
WORK ORDER NO: 30830

SAMPLE IDENTIFICATION: H3-3 C-3
NUS SAMPLE NO: P0113457
DATE SAMPLED : 04-APR-89
DATE RECEIVED: 05-APR-89
APPROVED BY: Joanne C. Simonic

TEST	DETERMINATION	RESULT	UNIT
0130	pH (in water)	11.8	
0310	Acid Neutralization Capacity	NONE	
0123	Total PCBs in soil PCB-1260	45	ug/g
1A20S	Percent Solids at 103C	81.7	%
T35	Moisture content	18.0	%
T70	Specific gravity f-grn	2.52	g/cc
T75	Unconfined compressive strength	1,147	psi
T85	Bulk Density	1.93	g/cc

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. DBA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 04/05/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001

VENDOR NO: 04885302
WORK ORDER NO: 39830

SAMPLE IDENTIFICATION: HD-2 C-3
NUS SAMPLE NO: P0113436
DATE SAMPLED : 04-APR-89
DATE RECEIVED: 05-APR-89
APPROVED BY: Joanne C. Simonic

TEST	DETERMINATION	RESULT	UNIT
T01	Falling Head Permeability	2.7x10-7	cc/sec

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 3541 0001
VENDOR NO: 04885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-3 C-3
NUS SAMPLE NO: P0113525
DATE SAMPLED : 04-APR-89
DATE RECEIVED: 05-APR-89
APPROVED BY: Jeanne C. Simonic

TEST	DETERMINATION	RESULT	UNIT
8915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.05	ug/L
	PCB-1221	<0.05	ug/L
	PCB-1232	<0.05	ug/L
	PCB-1242	<0.05	ug/L
	PCB-1248	<0.05	ug/L
	PCB-1254	<0.10	ug/L
	PCB-1260	<0.10	ug/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 04/25/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 04885002
WORK ORDER NO: 59830

SAMPLE IDENTIFICATION: H3-3 C-3
NUS SAMPLE NO: P0112020
DATE SAMPLED : 04-APR-89
DATE RECEIVED: 05-APR-89
APPROVED BY: Joanne C. Siamnic

TEST	DETERMINATION	RESULT	UNIT
0915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.05	ug/L
	PCB-1221	<0.05	ug/L
	PCB-1232	<0.05	ug/L
	PCB-1242	<0.05	ug/L
	PCB-1248	<0.05	ug/L
	PCB-1254	<0.10	ug/L
	PCB-1260	<0.10	ug/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/17/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06805302
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: KD-5 C-3 (P113460) / TCLP LEACH
NUS SAMPLE NO: P0116907
DATE SAMPLED :
DATE RECEIVED: 26-MAY-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT UNIT
0915	TCLP Extraction	DONE
0122	PRIORITY POLLUTANTS - PCBS	
	PCB-1016	< 0.05 ug/L
	PCB-1221	< 0.05 ug/L
	PCB-1232	< 0.05 ug/L
	PCB-1242	< 0.05 ug/L
	PCB-1248	< 0.05 ug/L
	PCB-1254	< 0.10 ug/L
	PCB-1260	< 0.10 ug/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 04/14/89

NUS CLIENT NO: 0541 0001

VENDOR NO: 06883302
WORK ORDER NO: 13830

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: HD-5 C-3
NUS SAMPLE NO: P0113460
DATE SAMPLED : 04-APR-89
DATE RECEIVED: 05-APR-89
APPROVED BY: Joanne C. Siemic

TEST	DETERMINATION	RESULT UNIT
N201	Freeze/Thaw Stability	DONE
T75	Unconfined compressive strength	216 psi

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55930

SAMPLE IDENTIFICATION: H3-30 C-7
NUS SAMPLE NO: P0113710
DATE SAMPLED: 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
9150	pH (in water)	12.1	
9310	Acid Neutralization Capacity	DONE	
9123	Total PCBs in soil PCB-1260	25	ug/g
I620S	Percent Solids at 103C	80.0	%
T55	Moisture content	17.0	%
T70	Specific gravity f-grn	2.53	g/cc
T75	Unconfined compressive strength	1,017	psi
T85	Bulk Density	1.93	g/cc

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000

NUS CLIENT NO: 0541 0001

VENDOR NO: 06885502
WORK ORDER NO: 53830

REPORT DATE: 06/21/89

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-31 C-7
NUS SAMPLE NO: P0113712
DATE SAMPLED : 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
T01	Falling Head Permability	2.8x10-7	cc/sec

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000

NUS CLIENT NO: 0541 0001

VENDOR NO: 06885502
WORK ORDER NO: 55830

REPORT DATE: 06/21/89

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-30 C-7
NUS SAMPLE NO: P0113711
DATE SAMPLED : 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Jeanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
0915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.05	ug/L
	PCB-1221	<0.05	ug/L
	PCB-1232	<0.05	ug/L
	PCB-1242	<0.05	ug/L
	PCB-1248	<0.05	ug/L
	PCB-1254	<0.10	ug/L
	PCB-1260	<0.10	ug/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO. 55930

SAMPLE IDENTIFICATION: H3-34 C-7 w/D
NUS SAMPLE NO: P0113714
DATE SAMPLED: 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
#915	TCLP Extraction	DONE	
6122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	< 0.05	ug/L
	PCB-1221	< 0.05	ug/L
	PCB-1232	< 0.05	ug/L
	PCB-1242	< 0.05	ug/L
	PCB-1248	< 0.05	ug/L
	PCB-1254	< 0.10	ug/L
	PCB-1260	0.12	ug/L
T100	Wet/Dry Stability	DONE	
T75	Unconfined compressive strength	407	psi

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME:	ENVIRESPONSE, INC. GSA RARITAN DEPOT	NUS CLIENT NO:	0541 0001
ADDRESS:	WOODBRIDGE AVE/BLDG 209 BAY F EDISON, NJ 08837-0000	VENDOR NO:	06885502
	REPORT DATE: 06/17/89	WORK ORDER NO:	55830
ATTENTION:	MR. STEPHEN SAWYER		
CC:			

SAMPLE IDENTIFICATION: H3-36 C-7 (P113716) / TCLP LEACH F/T
NUS SAMPLE NO: P0116908
DATE SAMPLED :
DATE RECEIVED: 26-MAY-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
9915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	< 0.05	ug/L
	PCB-1221	< 0.05	ug/L
	PCB-1232	< 0.05	ug/L
	PCB-1242	< 0.05	ug/L
	PCB-1248	< 0.05	ug/L
	PCB-1254	< 0.10	ug/L
	PCB-1260	0.12	ug/L

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06865502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-36 C-7 CONTROL
NUS SAMPLE NO P0113716
DATE SAMPLED : 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
9311	Freeze/Thaw Stability	DONE	
T75	Unconfined compressive strength	335	psi

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: HG-33 C-7 RECYCLE WATER
NUS SAMPLE NO: P0113713
DATE SAMPLED : 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.5	ug/L
	PCB-1221	<0.5	ug/L
	PCB-1232	<0.5	ug/L
	PCB-1242	<0.5	ug/L
	PCB-1248	<0.5	ug/L
	PCB-1254	<1.0	ug/L
	PCB-1260	27	ug/L
1490	pH	11.9	

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/07/89
ATTENTION: MR. STEPHEN SAWYER
CC:

MUS CLIENT NO: 0341 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-14 C-15 1116 HRS.
MUS SAMPLE NO: P0113534
DATE SAMPLED : 05-APR-89
DATE RECEIVED: 06-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
9150	pH (in water)	12.0	
9310	Acid Neutralization Capacity	DONE	
0123	Total PCBs in soil PCB-1260	16	ug/g
I6206	Percent Solids at 103C	80.1	%
T35	Moisture content	23.0	%
T70	Specific gravity f-grn	2.49	g/cc
T75	Unconfined compressive strength	850	psi
T85	Bulk Density	1.77	g/cc

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000

NUS CLIENT NO: 0541 0001

VENDOR NO: 06885302
WORK ORDER NO: 55830

REPORT DATE: 06/07/89

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-15 C-15 1116 HRS.
NUS SAMPLE NO: P0113536
DATE SAMPLED : 05-APR-89
DATE RECEIVED: 06-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
T01	Falling Head Permeability	6.0x10-9	cc/sec

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000

NUS CLIENT NO: 0541 0001

VENDOR NO: 04885502
WORK ORDER NO: 33830

REPORT DATE: 06/07/89

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-14 C-15 1116 HRS. TCLP LEACH
NUS SAMPLE NO: P0113535
DATE SAMPLED : 05-APR-89
DATE RECEIVED: 06-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
0915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.05	ug/L
	PCB-1221	<0.05	ug/L
	PCB-1232	<0.05	ug/L
	PCB-1242	<0.05	ug/L
	PCB-1248	<0.05	ug/L
	PCB-1254	<0.10	ug/L
	PCB-1260	0.16	ug/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000

REPORT DATE: 06/17/89

ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-24 C-15 (P113700) / TCLP LEACH F/T
NUS SAMPLE NO: P0116909
DATE SAMPLED :
DATE RECEIVED: 26-MAY-89
APPROVED BY: Jeanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
9915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	< 0.05	ug/L
	PCB-1221	< 0.05	ug/L
	PCB-1232	< 0.05	ug/L
	PCB-1242	< 0.05	ug/L
	PCB-1248	< 0.05	ug/L
	PCB-1254	< 0.10	ug/L
	PCB-1260	< 0.10	ug/L

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000

NUS CLIENT NO: 0541 0001

VENDOR NO: 06885502
WORK ORDER NO: 55830

REPORT DATE: 06/21/89

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-24 C-15 F/T
NUS SAMPLE NO: P0113700
DATE SAMPLED : 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
8311	Freeze/Thaw Stability	DONE	
T75	Unconfined compressive strength	412	psi

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/07/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-17 C-16 1535 HRS.
NUS SAMPLE NO: P0113537
DATE SAMPLED : 05-APR-89
DATE RECEIVED: 06-APR-89
APPROVED BY: Joanne C. Simonic

TEST	DETERMINATION	RESULT	UNIT
9150	pH (in water)	11.9	
9310	Acid Neutralization Capacity	DONE	
0123	Total PCBs in soil		
	PCB-1260	3.8	ug/g
I6206	Percent Solids at 103C	84.8	%
T55	Moisture content	15.5	%
T70	Specific gravity f-grn	2.54	g/cc
T75	Unconfined compressive strength	1,220	psi
T85	Bulk Density	2.11	g/cc

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/07/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06883502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-18 C-16
NUS SAMPLE NO: P0113339
DATE SAMPLED : 05-APR-89
DATE RECEIVED: 06-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
T01	Falling Head Permeability	1.3x10-8	cc/sec

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000

NUS CLIENT NO: 0541 0001

VENDOR NO: 06885502
WORK ORDER NO: 55830

REPORT DATE: 06/07/89
ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-17 C-16 TCLP LEACH
NUS SAMPLE NO: P0113538
DATE SAMPLED : 05-APR-89
DATE RECEIVED: 06-APR-89
APPROVED BY: Joanne C. Simonic

TEST	DETERMINATION	RESULT	UNIT
9915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.05	ug/L
	PCB-1221	<0.05	ug/L
	PCB-1232	<0.05	ug/L
	PCB-1242	<0.05	ug/L
	PCB-1248	<0.05	ug/L
	PCB-1254	<0.10	ug/L
	PCB-1260	<0.10	ug/L

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/17/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-27 C-16 (P113705) / TCLP LEACH F/T
NUS SAMPLE NO: P0116910
DATE SAMPLED :
DATE RECEIVED: 26-MAY-89
APPROVED BY: Joanne C. Siemnic

TEST	DETERMINATION	RESULT	UNIT
9915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	< 0.05	ug/L
	PCB-1221	< 0.05	ug/L
	PCB-1232	< 0.05	ug/L
	PCB-1242	< 0.05	ug/L
	PCB-1248	< 0.05	ug/L
	PCB-1254	< 0.10	ug/L
	PCB-1260	< 0.10	ug/L

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/07/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-20 C-17
NUS SAMPLE NO: P0113540
DATE SAMPLED : 05-APR-89
DATE RECEIVED: 06-APR-89
APPROVED BY: Joanne C. Simenic

TEST	DETERMINATION	RESULT	UNIT
0130	pH (in water)	11.8	
9310	Acid Neutralization Capacity	DONE	
0123	Total PCBs in soil PCB-1260	0.84	ug/g
I6206	Percent Solids at 103C	88.0	%
T55	Moisture content	13.5	%
T70	Specific gravity f-grn	2.56	g/cc
T75	Unconfined compressive strength	1,185	psi
T85	Bulk Density	2.14	g/cc

COMMENTS:

CLIENT ORIGINAL

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/07/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-21 C-17
NUS SAMPLE NO: P0113542
DATE SAMPLED : 05-APR-89
DATE RECEIVED: 06-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
T01	Falling Head Permability	2.5x10-7	cc/sec

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/07/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001

VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-20 C-17 TCLP LEACH
NUS SAMPLE NO: P0113541
DATE SAMPLED : 05-APR-89
DATE RECEIVED: 06-APR-89
APPROVED BY: Joanne C. Simonic

TEST	DETERMINATION	RESULT	UNIT
0915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	<0.05	ug/L
	PCB-1221	<0.05	ug/L
	PCB-1232	<0.05	ug/L
	PCB-1242	<0.05	ug/L
	PCB-1248	<0.05	ug/L
	PCB-1254	<0.10	ug/L
	PCB-1260	<0.10	ug/L

COMMENTS:

10

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/17/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-29 C-17 (P113709) / TCLP LEACH F/T Test
NUS SAMPLE NO: P0116911
DATE SAMPLED :
DATE RECEIVED: 26-MAY-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
8915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	< 0.5	ug/L
	PCB-1221	< 0.5	ug/L
	PCB-1232	< 0.5	ug/L
	PCB-1242	< 0.5	ug/L
	PCB-1248	< 0.5	ug/L
	PCB-1254	< 1.0	ug/L
	PCB-1260	< 1.0	ug/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

SAMPLE IDENTIFICATION: H3-29 C-17 F/T
NUS SAMPLE NO: P0113709
DATE SAMPLED: 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
6311	Freeze/Thaw Stability	DONE	
T75	Unconfined compressive strength	>564 *	psi

COMMENTS: * Sample exceeded load ring limitations.

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/17/89

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

ATTENTION: MR. STEPHEN SAWYER
CC:

SAMPLE IDENTIFICATION: H3-29 C-17C (P113708) / TCLP LEACH F/T Control
NUS SAMPLE NO: P0116914
DATE SAMPLED :
DATE RECEIVED: 26-MAY-89
APPROVED BY: Joanne C Simanic

TEST	DETERMINATION	RESULT	UNIT
0915	TCLP Extraction	DONE	
0122	PRIORITY POLLUTANTS - PCBS		
	PCB-1016	< 0.05	ug/L
	PCB-1221	< 0.05	ug/L
	PCB-1232	< 0.05	ug/L
	PCB-1242	< 0.05	ug/L
	PCB-1248	< 0.05	ug/L
	PCB-1254	< 0.10	ug/L
	PCB-1260	< 0.10	ug/L

COMMENTS:

LABORATORY_ANALYSIS_REPORT

CLIENT NAME: ENVIRESPONSE, INC. GSA RARITAN DEPOT
ADDRESS: WOODBRIDGE AVE/BLDG 209 BAY F
EDISON, NJ 08837-0000
REPORT DATE: 06/21/89
ATTENTION: MR. STEPHEN SAWYER
CC:

NUS CLIENT NO: 0541 0001
VENDOR NO: 06885502
WORK ORDER NO: 55830

F/T

SAMPLE IDENTIFICATION: H3-29 C-17 CONTROL
NUS SAMPLE NO: P0113708
DATE SAMPLED : 06-APR-89
DATE RECEIVED: 07-APR-89
APPROVED BY: Joanne C. Simanic

TEST	DETERMINATION	RESULT	UNIT
9311	Freeze/Thaw Stability	DONE	
T75	Unconfined compressive strength	274	psi

COMMENTS:

CLIENT ORIGINAL

RECORD SHEET 13.1: PERMEABILITY TEST

Sample Id. No.: H3-43 B-21 F/T 113689

Date of Test : - 20 JUN 89

Laboratory : SOILS

Technician : JCL

Method of Saturation: BACK PRESSURE

Approximate Time to Saturate (h): 2 1/2 Wks.

Room temperature at beginning of test (°C): 20.3

Additional pressure applied to burette 1. ΔP (kPa): 0

ΔP (cm of H_2O)*): 2,039.8

Interval No.	Time of Reading h:min	Level in Burette 1. h_1 (cm)	Level in Burette 2 h_2 (cm)
0	Day 1 0645	0.0	25.0
1	0845	6.7	18.3
2	1045	9.5	15.5
3	1245	10.9	14.1
4			
5	Day 2		
6			
7			
8			
9			

#1 kPa = 10.2 cm of H_2O.

SAMPLE

Dia.	5.14 cm
Area	20.72 cm^2
Lgth.	7.49 cm
Wt.	276.46 gm

SATURATION

$\frac{35.4}{36.2}$ X 100 = 98%

BURETTE

Dia.	1.11 cm
Area	0.97 cm^2

RECORD SHEET 13.2: PERMEABILITY TEST

Sample Id. No.: H3-43 B-21 F/T 113689

Interval No.	Length of Time Interval (s)	Difference in Head $H-h_2$ (cm)	Permeability, k (cm/s) at 20°C
1	7200	6.7	3.2×10^{-7}
2	7200	2.8	1.3×10^{-7}
3	7200	1.4	6.6×10^{-8}
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

Cumulative Time of Test(s): 21,600

Overall Permeability, k, at 20°C, (cm/s): 1.7×10^{-7}

RECORD SHEET 13.1: PERMEABILITY TEST

Sample Id. No.: H3-51 B-6 113779

Date of Test : 31 May 89

Laboratory : SOILS

Technician : KCL

Method of Saturation: Back Pressure

Approximate Time to Saturate (h): 2 Wks

Room temperature at beginning of test (^{o}C): 21.4

Additional pressure applied to burette 1. ΔP (kPa): 0

ΔP (cm of H_2O)*): 2,039.8

Interval No.	Time of Reading h:min	Level in Burette 1. h_1 (cm)	Level in Burette 2. h_2 (cm)
0	Day 1 0645	0.5	23.2
1	0745	7.1	16.6
2	0845	9.0	14.7
3			
4			
5	Day 2		
6			
7			
8			
9			

#1 kPa = 10.2 cm of H_2O.

SAMPLE

Dia.	6.71	cm
Area	35.34	cm^2
Lgth.	7.45	cm
Wt.	486.89	gm

BURETTE

Dia.	1.11	cm
Area	0.97	cm^2

Cell - P 1

RECORD SHEET 13.2: PERMEABILITY TEST

Sample Id. No.: H3 - 51 B-6 113779

Interval No.	Length of Time Interval (s)	Difference in Head $H-h_2$ (cm)	Permeability, k (ca/s) at 20°C
	3600	6.6	3.72×10^{-7}
2	3600	1.9	1.06×10^{-7}
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

Cumulative Time of Test(s): 7200

Overall Permeability, k, at 20°C, (cm/s): 2.4×10^{-7}

RECORD SHEET 13.1: PERMEABILITY TEST

Sample Id. No.: H3-66 B-6 DUP 113790

Date of Test : 31 May 89

Laboratory : SOILS

Technician : JCL

Method of Saturation: BACK PRESSURE

Approximate Time to Saturate (h): 2 Sks

Room temperature at beginning of test (°C): 21.4

Additional pressure applied to burette 1. ΔP (kPa): 0

ΔP (cm of H_2O)*): 2,039.8

Interval No.	Time of Reading h:min	Level in Burette 1. h_1 (cm)	Level in Burette 2 h_2 (cm)
0	Day 1 0645	1.2	22.9
1	0745	11.1	13.0
2			
3			
4			
5	Day 2		
6			
7			
8			
9			

#1 kPa = 10.2 cm of H_2O.

SAMPLE

Dia.	6.74	cm
Area	35.71	cm^2
Lgth.	7.92	cm
Wt.	512.00	gm

BURETTE

Dia.	1.11	cm
Area	0.97	cm^2

RECORD SHEET 13.2: PERMEABILITY TEST

Sample Id. No.: H3-66 B-6 DUP 113790

Interval No.	Length of Time Interval (s)	Difference in Head $H-h_2$ (cm)	Permeability, k (cm/s) at 20°C
1	3600	9.9	5.6×10^{-7}
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

Cumulative Time of Test(s): 3600

Overall Permeability, k, at 20°C, (cm/s): 5.6×10^{-7}

RECORD SHEET 13.1: PERMEABILITY TEST

Sample Id. No.: H3-55 B-7 113799

Date of Test : 31 MAY 89

Laboratory : SOILS

Technician : JCL

Method of Saturation: BACK PRESSURE

Approximate Time to Saturate (h): 2 Weeks

Room temperature at beginning of test (^{o}C): 21.4

Additional pressure applied to burette 1. ΔP (kPa): 0

ΔP (cm of H_2O)*): 2,039.8

Interval No.	Time of Reading h:min	Level in Burette 1. h_1 (cm)	Level in Burette 2. h_2 (cm)
0	Day 1 0645	0.3	24.1
1	0845	0.8	23.6
2	1045	1.2	23.2
3	1245	1.5	22.9
4	1445	1.9	22.5
5	Day 2 0635	3.5	20.9
6	0835	3.6	20.8
7	1035	3.8	20.6
8	1235	4.0	20.4
9	1435	4.1	20.3

#1 kPa = 10.2 cm of H_2O.

SAMPLE

Dia.	6.79	**cm**
Area	36.17	**cm^2**
Lgth.	7.81	**cm**
Wt.	546.82	**gm**

BURETTE

Dia.	1.11	**cm**
Area	0.97	**cm^2**

RECORD SHEET 13.2: PERMEABILITY TEST

Sample Id. No.: H3-55 B-7 113799

Interval No.	Length of Time Interval (s)	Difference in Head $H-h_2$ (cm)	Permeability, k (ca/s) at 20°C
1	7200	0.5	1.4×10^{-8}
2	7200	0.4	1.1×10^{-8}
3	7200	0.3	8.5×10^{-9}
4	7200	0.4	1.1×10^{-8}
5	57000	1.6	5.7×10^{-9}
6	7200	0.1	2.8×10^{-9}
7	7200	0.2	5.6×10^{-9}
8	7200	0.2	5.6×10^{-9}
9	7200	0.2	2.8×10^{-9}
10			
11			
12			
13			
14			

Cumulative Time of Test(s): 114,600

Overall Permeability, k, at 20°C, (cm/s): 7.0×10^{-9}

RECORD SHEET 13.1: PERMEABILITY TEST

Sample Id. No.: H3-59 B-8 113784

Date of Test : 31 May 89

Laboratory : SOILS

Technician : JCL

Method of Saturation: BACK PRESSURE

Approximate Time to Saturate (h): 2 Weeks

Room temperature at beginning of test (^oC): 21.4

Additional pressure applied to burette 1. ΔP (kPa): 0

ΔP (cm of H_2O)*): 2,039.8

Interval No.	Time of Reading h:min	Level in Burette 1. h_1 (cm)	Level in Burette 2 h_2 (cm)
0	Day 1 0645	1.1	22.5
1	0845	6.8	16.8
2	1045	7.3	16.3
3	1245	7.8	15.8
4	1445	8.2	15.4
5	Day 2		
6			
7			
8			
9			

#1 kPa = 10.2 cm of H_2O.

SAMPLE

Dia.	6.74	**cm**
Area	35.68	**cm^2**
Lgth.	7.87	**cm**
Wt.	545.83	**gm**

BURETTE

Dia.	1.11	**cm**
Area	0.97	**cm^2**

RECORD SHEET 13.2: PERMEABILITY TEST

Sample Id. No.: H3-59 B-8 113784

Interval No.	Length of Time Interval (s)	Difference in Head H-h_2 (cm)	Permeability, k (ca/s) at 20°C
1	7200	5.7	1.6 X 10^{-7}
2	7200	0.5	1.4 X 10^{-8}
3	7200	0.5	1.4 X 10^{-8}
4	7200	0.4	1.1 X 10^{-8}
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

Cumulative Time of Test(s): 28,800

Overall Permeability, k, at 20°C, (cm/s): 5.0 X 10^{-8}

RECORD SHEET 13.1: PERMEABILITY TEST

Sample Id. No.: H3-63 B-9 113787

Date of Test : -31 May 89

Laboratory : SOILS

Technician : JCL

Method of Saturation: BACK PRESSURE

Approximate Time to Saturate (h): 2 Weeks

Room temperature at beginning of test (°C): 21.4

Additional pressure applied to burette 1. ΔP (kPa): 0

ΔP (cm of H_2O)*): 2,039.8

Interval No.	Time of Reading h:min	Level in Burette 1. h_1 (cm)	Level in Burette 2. h_2 (cm)
0	Day 1 0645	0.2	23.9
1	0745	5.6	18.5
2	0845	8.2	15.9
3	0945	9.6	14.5
4			
5	Day 2		
6			
7			
8			
9			

#1 kPa = 10.2 cm of H_2O.

SAMPLE

Dia.	6.64	cm
Area	34.66	cm^2
Lgth.	7.74	cm
Wt.	511.33	gm

BURETTE

Dia.	1.11	cm
Area	0.97	cm^2

RECORD SHEET 13.2: PERMEABILITY TEST

Sample Id. No.: H3-63 B-9 113787

Interval No.	Length of Time Interval (s)	Difference in Head $H-h_2$ (cm)	Permeability, k (ca/s) at 20°C
1	3600	5.4	3.0×10^{-7}
2	3600	2.6	1.5×10^{-7}
3	3600	1.4	7.8×10^{-8}
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

Cumulative Time of Test(s): 10,800

Overall Permeability, k, at 20°C, (cm/s): 1.8×10^{-7}

RECORD SHEET 13.1: PERMEABILITY TEST

Sample Id. No.: H3-40 B-21 113686

Date of Test : 9 May 1989

Laboratory : SOILS

Technician : JCL

Method of Saturation: BACK PRESSURE

Approximate Time to Saturate (h): 3 weeks

Room temperature at beginning of test (°C): 22.1

Additional pressure applied to burette 1. Δ P (kPa): 0

Δ P (cm of H_2O)*): 2039.8

Interval No.	Time of Reading h:min	Level in Burette 1. h_1 (cm)	Level in Burette 2 h_2 (cm)
0	Day 1 0800	0.5	24.1
1	1000	0.9	23.7
2	1200	1.1	23.5
3	1400	1.2	23.4
4	1600	1.3	23.3
5	Day 2 0650	2.6	22.0
6	0850	2.7	21.9
7	1050	2.8	21.8
8	1250	2.9	21.7
9	1450	3.0	21.6

#1 kPa = 10.2 cm of H_2O.

SAMPLE

Dia.	6.66	cm
Area	34.84	cm^2
Lgth.	7.65	cm
Wt.	552.89	gm

BURETTE

Dia.	1.11	cm
Area	0.97	cm^2

CELL = P5

RECORD SHEET 13.2: PERMEABILITY TEST

Sample Id. No.: H3-40 B-21 113686

Interval No.	Length of Time Interval (s)	Difference in Head $H-h_2$ (cm)	Permeability, k (ca/s) at 20°C
1	7200	0.4	1.1×10^{-8}
2	7200	0.2	5.6×10^{-9}
3	7200	0.1	2.8×10^{-9}
4	7200	0.1	2.8×10^{-9}
5	53400	1.3	4.9×10^{-9}
6	7200	0.1	2.8×10^{-9}
7	7200	0.1	2.8×10^{-9}
8	7200	0.1	2.8×10^{-9}
9	7200	0.1	2.8×10^{-9}
10			
11			
12			
13			
14			

Cumulative Time of Test(s): 111000

Overall Permeability, k, at 20°C, (cm/s): 4.5×10^{-9}

RECORD SHEET 13.1: PERMEABILITY TEST

Sample Id. No.: H3-47 B-22 113695

Date of Test : 9 May 1989

Laboratory : SOILS

Technician : JCL

Method of Saturation: BACK PRESSURE

Approximate Time to Saturate (h): 3 weeks

Room temperature at beginning of test (^oC): 22.1

Additional pressure applied to burette 1. Δ P (kPa): 0

Δ P (cm of H_2O)*): 2039.8

Interval No.	Time of Reading h:min	Level in Burette 1. h_1 (cm)	Level in Burette 2. h_2 (cm)
0	Day 1 0800	0.3	24.0
1	1000	1.0	23.3
2	1200	1.3	23.0
3	1400	1.7	22.6
4	1600	2.2	22.1
5	Day 2 0650	3.8	20.5
6	0850	4.0	20.3
7	1050	4.2	20.1
8	1250	4.3	20.0
9	1450	4.4	19.9

#1 kPa = 10.2 cm of H_2O.

SAMPLE

Dia.	5.17	cm
Area	20.99	cm^2
Lgth.	7.84	cm
Wt.	303.23	gm

BURETTE

Dia.	1.11	cm
Area	0.97	cm^2

CELL = P6

RECORD SHEET 13.2: PERMEABILITY TEST

Sample Id. No.: H3-47 B-22 113695

Interval No.	Length of Time Interval (s)	Difference in Head $H-h_2$ (cm)	Permeability, k (ca/s) at 20°C
1	7200	0.7	3.3×10^{-8}
2	7200	0.3	1.4×10^{-8}
3	7200	0.4	1.9×10^{-8}
4	7200	0.5	2.4×10^{-8}
5	53400	1.6	1.0×10^{-8}
6	7200	0.2	9.5×10^{-9}
7	7200	0.2	9.5×10^{-9}
8	7200	0.1	4.7×10^{-9}
9	7200	0.1	4.7×10^{-9}
10			
11			
12			
13			
14			

Cumulative Time of Test(s): 111000

Overall Permeability, k, at 20°C, (cm/s): 1.3×10^{-8}

RECORD SHEET 13.1: PERMEABILITY TEST

Sample Id. No.: H3-9 C-1 113464

Date of Test : 9 May 1989

Laboratory : SOILS

Technician : JCL

Method of Saturation: BACK PRESSURE

Approximate Time to Saturate (h): 3 weeks

Room temperature at beginning of test (^oC): 22.1

Additional pressure applied to burette 1. ΔP (kPa): 0

ΔP (cm of H_2O)*): 2039.8

Interval No.	Time of Reading h:min	Level in Burette 1. h_1 (cm)	Level in Burette 2. h_2 (cm)
0	Day 1 0800	0.3	23.8
1	1000	0.6	23.5
2	1200	0.9	23.2
3	1400	1.2	22.9
4	1600	1.5	22.6
5	Day 2 0650	3.0	21.1
6	0850	3.1	21.0
7	1050	3.3	20.8
8	1250	3.4	20.7
9	1450	3.5	20.6

#1 kPa = 10.2 cm of H_2O.

SAMPLE

Dia.	6.78	cm
Area	36.10	cm^2
Lgth.	7.78	cm
Wt.	567.22	gm

BURETTE

Dia.	1.11	cm
Area	0.97	cm^2

CELL = P1

RECORD SHEET 13.2: PERMEABILITY TEST

Sample Id. No.: H3-9 C-1 113464

Interval No.	Length of Time Interval (s)	Difference in Head $H-h_2$ (cm)	Permeability, k (cm/s) at 20°C
1	7200	0.3	8.2×10^{-9}
2	7200	0.3	8.2×10^{-9}
3	7200	0.3	8.2×10^{-9}
4	7200	0.3	8.2×10^{-9}
5	53400	1.5	5.5×10^{-9}
6	7200	0.1	2.7×10^{-9}
7	7200	0.2	5.5×10^{-9}
8	7200	0.1	2.7×10^{-9}
9	7200	0.1	2.7×10^{-9}
10			
11			
12			
13			
14			

Cumulative Time of Test(s): 111000

Overall Permeability, k, at 20°C, (cm/s): 5.7×10^{-9}

RECORD SHEET 13.1: PERMEABILITY TEST

Sample Id. No.: H3-2 C-3 113456

Date of Test : 9 May 1989

Laboratory : SOILS

Technician : JCL

Method of Saturation: BACK PRESSURE

Approximate Time to Saturate (h): 3 weeks

Room temperature at beginning of test (°C): 22.1

Additional pressure applied to burette 1. ΔP (kPa): 0

ΔP (cm of H_2O)*): 2039.8

Interval No.	Time of Reading h:min	Level in Burette 1. h_1 (cm)	Level in Burette 2 h_2 (cm)
0	Day 1 0730	0.9	24.1
1	0830	8.3	16.6
2	0930	10.7	14.1
3			
4			
5	Day 2		
6			
7			
8			
9			

#1 kPa = 10.2 cm of H_2O.

SAMPLE

Dia.	6.75	cm
Area	35.78	cm^2
Lgth.	7.74	cm
Wt.	537.96	gm

BURETTE

Dia.	1.11	cm
Area	0.97	cm^2

CELL = BK1

RECORD SHEET 13.2: PERMEABILITY TEST

Sample Id. No.: H3-2 C-3 113456

Interval No.	Length of Time Interval (s)	Difference in Head $H-h_2$ (cm)	Permeability, k (ca/s) at 20°C
1	3600	7.4	4.1 x 10^{-7}
2	3600	2.4	1.3 x 10^{-7}
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

Cumulative Time of Test(s): 7200

Overall Permeability, k, at 20°C, (cm/s): 2.7 x 10^{-7}

RECORD SHEET 13.1: PERMEABILITY TEST

Sample Id. No.: H3-31 C-7 113712

Date of Test : 31 May 89

Laboratory : SOILS

Technician : JCL

Method of Saturation: Back Pressure

Approximate Time to Saturate (h): 2 Wks

Room temperature at beginning of test (°C): 21.4

Additional pressure applied to burette 1. ΔP (kPa): 0

ΔP (cm of H_2O)*): 2,039.8

Interval No.	Time of Reading h:min	Level in Burette 1. h_1 (cm)	Level in Burette 2 h_2 (cm)
0	Day 1 0645	0.2	24.6
1	0845	10.1	14.7
2			
3			
4			
5	Day 2		
6			
7			
8			
9			

#1 kPa = 10.2 cm of H_2O.

SAMPLE

Dia.	6.76	cm
Area	35.86	cm^2
Lgth.	7.84	cm
Wt.	545.04	gm

SATURATION

$$\frac{35.5}{36.2} \times 100 = 98\%$$

BURETTE

Dia.	1.11	cm
Area	0.97	cm^2

Cell - Bk1

RECORD SHEET 13.2: PERMEABILITY TEST

Sample Id. No.: H3-31 C-7 113712

Interval No.	Length of Time Interval (s)	Difference in Head $H-h_2$ (cm)	Permeability, k (ca/s) at 20°C
1	7200	9.9	2.78 X10^{-7}
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

Cumulative Time of Test(s): 7200

Overall Permeability, k, at 20°C, (cm/s): 2.8 X 10^{-7}

RECORD SHEET 13.1: PERMEABILITY TEST

Sample Id. No.: H3-15 C-15 113536

Date of Test : 9 May 1989

Laboratory : SOILS

Technician : JCL

Method of Saturation: BACK PRESSURE

Approximate Time to Saturate (h): 3 weeks

Room temperature at beginning of test (°C): 22.1

Additional pressure applied to burette 1. ΔP (kPa): 0

ΔP (cm of H_2O)*): 2039.8

Interval No.	Time of Reading h:min	Level in Burette 1. h_1 (cm)	Level in Burette 2. h_2 (cm)
0	Day 1 0800	0.4	23.6
1	1000	0.6	23.4
2	1200	0.9	23.1
3	1400	1.2	22.8
4	1600	1.5	22.5
5	Day 2 0650	3.1	20.9
6	0850	3.3	20.7
7	1050	3.4	20.6
8	1250	3.5	20.5
9	1450	3.6	20.4

#1 kPa = 10.2 cm of H_2O.

SAMPLE

Dia.	6.57	cm
Area	33.90	cm^2
Lgth.	7.66	cm
Wt.	510.50	gm

BURETTE

Dia.	1.11	cm
Area	0.97	cm^2

CELL = P2

RECORD SHEET 13.2: PERMEABILITY TEST

Sample Id. No.: H3-15 C-15 113536

Interval No.	Length of Time Interval (s)	Difference in Head $H-h_2$ (cm)	Permeability, k (cm/s) at 20°C
1	7200	0.2	5.7×10^{-9}
2	7200	0.3	8.6×10^{-9}
3	7200	0.3	8.6×10^{-9}
4	7200	0.3	8.6×10^{-9}
5	53400	1.6	6.2×10^{-9}
6	7200	0.2	5.7×10^{-9}
7	7200	0.1	2.9×10^{-9}
8	7200	0.1	2.9×10^{-9}
9	7200	0.1	2.9×10^{-9}
10			
11			
12			
13			
14			

Cumulative Time of Test(s): 111000

Overall Permeability, k, at 20°C, (cm/s): 6.0×10^{-9}

RECORD SHEET 13.1: PERMEABILITY TEST

Sample Id. No.: **H3-18 C-16 113539**

Date of Test : **9 May 1989**

Laboratory : **SOILS**

Technician : **JCL**

Method of Saturation: **BACK PRESSURE**

Approximate Time to Saturate (h): **3 weeks**

Room temperature at beginning of test (°C): **22-1**

Additional pressure applied to burette 1. ΔP (kPa): **0**

ΔP (cm of H_2O)*): **2039.8**

Interval No.	Time of Reading h:min	Level in Burette 1. h_1 (cm)	Level in Burette 2 h_2 (cm)
0	Day 1 0800	0.6	23.5
1	1000	2.2	21.9
2	1200	3.0	21.1
3	1400	3.6	20.5
4	1600	4.1	20.0
5	Day 2 0650	7.4	16.7
6	0850	7.6	16.5
7	1050	7.8	16.3
8	1250	7.9	16.2
9	1450	8.0	16.1

#1 kPa = 10.2 cm of H_2O.

SAMPLE

Dia.	6.77	cm
Area	36.00	cm^2
Lgth.	7.94	cm
Wt.	600.34	gm

BURETTE

Dia.	1.11	cm
Area	0.97	cm^2

CELL = P3

RECORD SHEET 13.2: PERMEABILITY TEST

Sample Id. No.: H3-18 C-16 113539

Interval No.	Length of Time Interval (s)	Difference in Head $H-h_2$ (cm)	Permeability, k (ca/s) at 20°C
1	7200	1.6	4.5×10^{-8}
2	7200	0.8	2.2×10^{-8}
3	7200	0.6	1.7×10^{-8}
4	7200	0.5	1.4×10^{-8}
5	53400	3.3	1.2×10^{-8}
6	7200	0.2	5.6×10^{-9}
7	7200	0.2	5.6×10^{-9}
8	7200	0.1	2.8×10^{-9}
9	7200	0.1	2.8×10^{-9}
10			
11			
12			
13			
14			

Cumulative Time of Test(s): 111000

Overall Permeability, k, at 20°C, (cm/s): 1.3×10^{-8}

RECORD SHEET 13.1: PERMEABILITY TEST

Sample Id. No.: H3-21 C-17 113542

Date of Test : 9 May 1989

Laboratory : SOILS

Technician : JCL

Method of Saturation: BACK PRESSURE

Approximate Time to Saturate (h): 3 weeks

Room temperature at beginning of test (°C): 22.1

Additional pressure applied to burette 1. ∆P (kPa): 0

∆P (cm of H_2O)*): 2039.8

Interval No.	Time of Reading h:min	Level in Burette 1. h_1 (cm)	Level in Burette 2. h_2 (cm)
0	Day 1 0730	2.7	21.6
1	0830	10.7	13.4
2	0930	11.2	12.5
3			
4			
5	Day 2		
6			
7			
8			
9			

#1 kPa = 10.2 cm of H_2O.

SAMPLE

Dia.	6.80	cm
Area	36.32	cm^2
Lgth.	7.64	cm
Wt.	597.95	gm

BURETTE

Dia.	1.11	cm
Area	0.97	cm^2

CELL = P4

RECORD SHEET 13.2: PERMEABILITY TEST

Sample Id. No.: H3-21 C-17 113542

Interval No.	Length of Time Interval (s)	Difference in Head $H-h_2$ (cm)	Permeability, k (cm/s) at 20°C
1	3600	8.0	4.3×10^{-7}
2	3600	0.5	3.7×10^{-8}
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

Cumulative Time of Test(s): 7200

Overall Permeability, k, at 20°C, (cm/s): 2.5×10^{-7}

RECORD SHEET 12.1: WET/DRY WEATHERING TEST

Sample ID No.: P113687 H3-42-B21 T3 / P113688 H3-42-B-21 C3

Date and Time of Test Beginning: 4/18 8:00

Laboratory:

Technician: MPS

Mass of Test Specimen, $W_{w,t}$ (g): T3 284.37

Mass of Control Specimen, $W_{w,c}$ (g): C3 281.39

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	T3	152.32	152.54	C3	155.43	155.57
2		148.19	148.33		156.49	156.59
3		152.32	153.00		155.44	155.51
4		148.19	148.27		156.49	156.57
5		152.31	152.38		155.42	155.47
6		148.18	148.22		156.49	156.53
7		152.30	152.37		155.41	155.47
8		148.18	148.22		156.48	156.50
9		152.30	152.36		155.42	155.46
10		148.18	148.22		156.48	156.51
11		152.30	152.36		155.41	155.44
12		148.18	148.22		156.49	156.50

VISUAL OBSERVATIONS:

RECORD SHEET 12.2: WET/DRY WEATHERING TEST

Sample ID No.: P113687 H3-42-8-21

Dry Weight of Test Specimen, W d,t (g): T3 = 284.37 = 240.01

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	.22	.0009	.0009	.0003	.0003
2	.14	.0006	.0015	.0002	.0005
3	.68	.0028	.0043	.0025	.0030
4	.08	.0003	.0046	0	.0030
5	.07	.0003	.0049	.0001	.0031
6	.04	.0002	.0051	0	.0031
7	.07	.0003	.0054	0	.0031
8	.04	.0002	.0056	.0001	.0032
9	.06	.0002	.0058	0	.0032
10	.04	.0002	.0060	.0001	.0033
11	.06	.0002	.0062	.0001	.0034
12	.04	.0002	.0064	.0002	.0036

RECORD SHEET 12.3: WET/DRY WEATHERING TEST

Sample ID No.: P113688 H3-42-B-21

Dry Weight of Control Specimen, W d,c (g): C3- 281.39 = 237.49

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weigt Loss
1	.14	.0006	.0006
2	.10	.0004	.0010
3	.07	.0003	.0013
4	.08	.0003	.0016
5	.05	.0002	.0018
6	.04	.0002	.0020
7	.06	.0003	.0023
8	.02	.0001	.0024
9	.04	.0002	.0026
10	.03	.0001	.0027
11	.03	.0001	.0028
12	.01	0	.0028

RECORD SHEET 4: WATER CONTENT

Sample ID No.: P113684 /H3-38 B-21

Date of Test: 4/20

Laboratory:

Technician: MPS

Container Number	Mass of Container, W c (g)	Mass of Container + Wet Sample, W w (g)	Date/Time	Mass of Container + Dried Sample W d (g)
A-13	19.90	66.42	4/21 10:00	59.62
			4/22 9:30	59.52
			4/23 10:00	59.13
			4/24 8:30	59.15

Water Content (wet weight basis): 15.6

RECORD SHEET 12.1: WET/DRY WEATHERING TEST

Sample ID No.: P113691 H3-44 B-22 T4 / P113692 H3-44-B-22 C4

Date and Time of Test Beginning: 4/18 8:00

Laboratory:

Technician: MPS

Mass of Test Specimen, W w,t (g): T4 290.14

Mass of Control Specimen, W w,c (g): C4 300.14

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	T4	155.44	155.68	C4	162.43	162.48
2		149.80	149.93		156.71	156.80
3		155.44	155.55		162.43	162.50
4		149.81	149.88		156.71	156.77
5		155.44	155.48		162.42	162.47
6		149.81	149.86		156.71	Broke while boiling 4/30
7		155.43	155.50		162.42	162.48
8		149.81	149.84		151.54	151.56
9		155.42	155.47		162.42	162.45
10		149.81	149.85		151.55	151.58
11		155.41	155.47		162.40	162.45
12		149.80	149.83		151.54	151.56

VISUAL OBSERVATIONS:

RECORD SHEET 12.2: WET/DRY WEATHERING TEST

Sample ID No.: P113691 H3-44 B-22

Dry Weight of Test Specimen, W d,t (g): T4 290.14 = 232.98

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative	.	Cumulative
1	.24	.0010	.0010	.0008	.0008
2	.13	.0006	.0016	.0002	.0010
3	.11	.0005	.0021	.0002	.0012
4	.07	.0003	.0024	.0001	.0013
5	.04	.0002	.0026	0	.0013
6	.05	.0002	.0028	.0002	.0015
7	.07	.0003	.0031	.0001	.0016
8	.03	.0001	.0032	0	.0016
9	.05	.0002	.0034	.0001	.0017
10	.04	.0002	.0036	.0001	.0018
11	.06	.0003	.0039	.0001	.0019
12	.03	.0001	.0040	0	.0019

RECORD SHEET 12.3: WET/DRY WEATHERING TEST

Sample ID No.: P113692 H3-44-B-22

Dry Weight of Control Specimen, W d,c (g): C4 = 300.14 = 241.01

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weigt Loss
1	.05	.0002	.0002
2	.09	.0004	.0006
3	.07	.0003	.0009
4	.06	.0002	.0011
5	.05	.0002	.0013
6	0	0	.0013
7	.06	.0002	.0015
8	.02	.0001	.0016
9	.03	.0001	.0017
10	.03	.0001	.0018
11	.05	.0002	.0020
12		.0001	.0021

RECORD SHEET 4: WATER CONTENT

Sample ID No.: P113696 / H3-48 B-22

Date of Test: 4/20

Laboratory:

Technician: MPS

Container Number	Mass of Container, W c (g)	Mass of Container + Wet Sample, W w (g)	Date/Time	Mass of Container + Dried Sample W d (g)
A-14	19.84	81.10	4/21 10:00	69.00
			4/22 9:30	68.92
			4/23 10:00	69.07
			4/24 8:30	69.04

Water Content (wet weight basis): 19.7%

RECORD SHEET 12.1: WET/DRY WEATHERING TEST T10 C10

Sample ID No.: P113795 H3-72 B-6 / P113798 H3-73 B-6

Date and Time of Test Beginning: 4/19 8:00

Laboratory:

Technician: MDS

Mass of Test Specimen, $W_{w,t}$ (g): T10 290.08

Mass of Control Specimen, $W_{w,c}$ (g): C10 285.81 ·

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	T10	159.35	159.57	C10	146.98	147.13
2		151.34	151.45		150.09	150.16
3		159.34	159.44		146.98	147.04
4		151.32	151.42		150.09	150.13
5		159.35	159.43		146.98	147.03
6		151.32	151.40		150.08	150.13
7		159.34	159.41		146.98	147.02
8		151.34	151.41		150.09	150.13
9		159.34	159.40		146.98	147.03
10		151.35	151.40		150.09	150.13
11		159.35	159.39		146.98	147.00
12		151.34	151.37		150.09	150.11

VISUAL OBSERVATIONS:

RECORD SHEET 12.2: WET/DRY WEATHERING TEST

Sample ID No.: P113795 H3-72 B-6

Dry Weight of Test Specimen, W d,t (g): T10 = 290.08 = 233.51

.8050

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	.22	.0009	.0009	.0002	.0002
2	.11	.0005	.0014	.0002	.0004
3	.10	.0004	.0018	.0001	.0005
4	.10	.0004	.0022	.0002	.0007
5	.08	.0003	.0025	.0001	.0008
6	.08	.0003	.0028	.0001	.0009
7	.07	.0003	.0031	.0001	.0010
8	.07	.0003	.0034	.0001	.0011
9	.06	.0003	.0037	.0001	.0012
10	.05	.0002	.0039	0	.0012
11	.04	.0002	.0041	.0001	.0013
12	.03	.0001	.0042	0	.0013

RECORD SHEET 12.3: WET/DRY WEATHERING TEST

Sample ID No.: P113798 H3-73 B-6

Dry Weight of Control Specimen, W d,c (g): C10 = 285.81 =230.08

1605D

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weigt Loss
1	.15	.0007	.0007
2	.07	.0003	.0010
3	.06	.0003	.0013
4	.04	.0002	.0015
5	.05	.0002	.0017
6	.05	.0002	.0019
7	.04	.0002	.0021
8	.04	.0002	.0023
9	.05	.0002	.0025
10	.04	.0002	.0027
11	.02	.0001	.0028
12	.02	.0001	.0029

RECORD SHEET 4: WATER CONTENT

Sample ID No.: P113777 H3-50 B-6

Date of Test: 4/20

Laboratory:

Technician: MDS

Container Number	Mass of Container, W c (g)	Mass of Container + Wet Sample, W w (g)	Date/Time	Mass of Container + Dried Sample W d (g)
A-23	20.00	70.34	4/20 10:00	60.93
			4/22 9:30	60.82
			4/23 10:00	60.51
			4/24 8:30	60.50

Water Content (wet weight basis): 19.5%

RECORD SHEET 12.1: WET/DRY WEATHERING TEST

Sample ID No.:	T9 P113791 H3-69-B-6 DUP. / P13792 C9 H3-69 B-6 DUP.
Date and Time of Test Beginning:	4/19 8:00
Laboratory:	
Technician:	MPS
Mass of Test Specimen, W w,t (g):	T9 273.23
Mass of Control Specimen, W w,c (g):	C9 275.01

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	T9	149.20	149.37	C9	155.75	155.89
2		150.79	150.87		147.48	147.54
3		149.18	149.28		155.74	155.81
4		150.78	151.03		147.47	147.52
5		149.18	149.25		155.75	155.79
6		150.78	150.85		147.46	147.51
7		149.19	149.25		155.74	155.79
8		150.78	150.86		147.77	147.52
9		149.19	149.23		155.74	155.78
10		150.78	150.84		147.48	147.52
11		149.19	149.21		155.75	149.77
12		150.79	150.81		147.48	147.49

VISUAL OBSERVATIONS:

RECORD SHEET 12.2: WET/DRY WEATHERING TEST

Sample ID No.: P113791 H3-69 B-6 DUP.

Dry Weight of Test Specimen, W d,t (g): Tg = 273.23 = 214.49

.7850

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	.17	.0008	.0008	.0002	.0002
2	.08	.0004	.0012	.0001	.0003
3	.10	.0005	.0017	.0002	.0005
4	.25	.0012	.0029	.0010	.0015
5	.07	.0003	.0032	.0001	.0016
6	.07	.0003	.0035	.0001	.0017
7	.06	.0003	.0038	.0001	.0018
8	.08	.0004	.0042	.0002	.0020
9	.04	.0002	.0044	0	.0020
10	.06	.0003	.0047	.0001	.0021
11	.02	.0001	.0048	0	.0021
12	.02	.0001	.0049	.0001	.0022

RECORD SHEET 12.3: WET/DRY WEATHERING TEST

Sample ID No.: P113792 H3-69-B-6 DUP.

Dry Weight of Control Specimen, W d,c (g): C9 = 275.01 = 215.88

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weigt Loss
1	.14	.0006	.0006
2	.06	.0003	.0009
3	.07	.0003	.0012
4	.05	.0002	.0014
5	.04	.0002	.0016
6	.05	.0002	.0018
7	.05	.0002	.0020
8	.05	.0002	.0022
9	.04	.0002	.0024
10	.04	.0002	.0026
11	.02	.0001	.0027
12	.01	0	.0027

RECORD SHEET 4: WATER CONTENT

Sample ID No.: P113788/ H3-65 B-6 d

Date of Test: 4/20

Laboratory:

Technician: MDS

Container Number	Mass of Container, W c (g)	Mass of Container + Wet Sample, W w (g)	Date/Time	Mass of Container + Dried Sample W d (g)
A-73	19.99	68.92	4/21 10:00	58.76
			4/22 9:30	58.67
			4/23 10:00	58.43
			4/24 8:30	58.41

Water Content (wet weight basis): 21.5%

RECORD SHEET 4: WATER CONTENT

Sample ID No.: P113788/H3-65 (DUP) B-6 d

Date of Test: 4/20

Laboratory:

Technician: MPS

Container Number	Mass of Container, W c (g)	Mass of Container + Wet Sample, W w (g)	Date/Time	Mass of Container + Dried Sample W d (g)
A-83	20.03	59.45	4/21 10:00	51.48
			4/22 9:30	51.46
			4/23 10:00	

Water Content (wet weight basis): 20.3%

RECORD SHEET 12.1: *WET/DRY WEATHERING TEST T11 / C11

Sample ID No.: P113800 H3-75 B-7 /P113801 H3-76 B-7

Date and Time of Test Beginning: 4/19 8:00

Laboratory:

Technician: MDS

Mass of Test Specimen, $W_{w,t}$ (g): T11 284.99

Mass of Control Specimen, $W_{w,c}$ (g): C11 278.74

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	T11	146.80	146.98	C11	145.25	145.38
2	T11	149.07	149.17	C11	151.36	151.42
3	T11	146.80	146.89	C11	145.25	145.29
4	T11	149.07	149.14	C11	151.36	151.40
5	T11	146.81	146.86	C11	145.25	145.28
6	T11	149.06	149.11	C11	151.35	151.39
7	T11	146.81	146.87	C11	145.24	145.29
8	T11	149.07	149.13	C11	151.36	151.40
9	T11	146.80	146.86	C11	145.23	145.28
10	T11	149.08	149.13	C11	151.36	151.40
11	T11	146.81	146.85	C11	145.23	145.26
12	T11	149.08	149.10	C11	151.35	151.37

VISUAL OBSERVATIONS:

RECORD SHEET 12.2: WET/DRY WEATHERING TEST

Sample ID No.: P113800 H3-75 B-7

Dry Weight of Test Specimen, W d,t (g): T11 = 284.99 = 234.58

.8231

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	.18	.0008	.0008	.0002	.0002
2	.10	.0004	.0012	.0001	.0003
3	.09	.0004	.0016	.0002	.0005
4	.07	.0003	.0019	.0001	.0006
5	.05	.0002	.0021	0	.0006
6	.05	.0002	.0023	0	.0006
7	.06	.0003	.0026	.0001	.0007
8	.06	.0003	.0029	.0001	.0008
9	.06	.0003	.0032	.0001	.0009
10	.05	.0002	.0034	0	.0009
11	.04	.0002	.0036	.0001	.0010
12	.02	.0001	.0037	0	.0010

RECORD SHEET 12.3: WET/DRY WEATHERING TEST

Sample ID No.: P113801 H3-76 B-7

Dry Weight of Control Specimen, W d,c (g): C11 = 27~~2~~8.74 = 230.24

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weigt Loss
1	.13	.0006	.0006
2	.06	.0003	.0009
3	.04	.0002	.0011
4	.04	.0002	.0013
5	.03	.0001	.0014
6	.04	.0002	.0016
7	.05	.0002	.0018
8	.04	.0002	.0020
9	.05	.0002	.0022
10	.04	.0002	.0024
11	.03	.0001	.0025
12	.02	.0001	.0026

RECORD SHEET 4: WATER CONTENT

Sample ID No.: P113780 H3-54 B-7

Date of Test: 4/20

Laboratory:

Technician: MDS

Container Number	Mass of Container, W_c (g)	Mass of Container + Wet Sample, W_w (g)	Date/Time	Mass of Container + Dried Sample W_d (g)
A-26	20.30	84.54	4/20 10:00	73.36
			4/22 9:30	73.34

Water Content (wet weight basis): 17.4%

RECORD SHEET 12.1: WET/DRY WEATHERING TEST T12 C12

Sample ID No.: P113810 H3-79 B-8 /P113811 H3-79 B-8

Date and Time of Test Beginning: 4/19 8:00

Laboratory:

Technician: MDS

Mass of Test Specimen, $W_{w,t}$ (g): T12 296.99

Mass of Control Specimen, $W_{w,c}$ (g): C12 300.22

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	T12	152.75	152.91	C12	145.88	145.99
2		145.10	145.15		146.07	146.11
3		152.76	152.80		145.88	145.92
4		145.09	145.17		146.08	146.10
5		152.75	Broke while boiling 4/29		145.88	145.89
6		145.08	145.13		146.07	146.09
7		155.49	155.52		145.86	145.89
8		145.10	145.18		146.07	146.11
9		155.49	155.53		145.87	145.90
10		145.09	145.13		146.08	146.10
11		155.50	155.53		145.87	145.90
12		145.09	145.11		146.07	146.08

VISUAL OBSERVATIONS:

RECORD SHEET 12.2: WET/DRY WEATHERING TEST

Sample ID No.: P113810 H3-79 B-8

Dry Weight of Test Specimen, W d,t (g): T12 = 296.99 = 242.94

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	.16	.0007	.0007	.0003	.0003
2	.05	.0002	.0009	0	.0003
3	.04	.0002	.0011	0	.0003
4	.08	.0003	.0014	.0002	.0005
5	0	0	.0014	0	.0005
6	.05	.0002	.0016	.0001	.0006
7	.03	.0001	.0017	0	.0006
8	.08	.0003	.0020	.0001	.0007
9	.04	.0002	.0022	.0001	.0008
10	.04	.0002	.0024	.0001	.0009
11	.03	.0001	.0025	0	.0009
12	.02	.0001	.0026	.0001	.0010

RECORD SHEET 12.3: WET/DRY WEATHERING TEST

Sample ID No.: P113811 H3-79 B-8

Dry Weight of Control Specimen, W d,c (g): C12 = 300.22 =245.58

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weigt Loss
1	.11	.0004	.0004
2	.04	.0002	.0006
3	.04	.0002	.0008
4	.02	.0001	.0009
5	.01	0	.0009
6	.02	.0001	.0010
7	.03	.0001	.0011
8	.04	.0002	.0013
9	.03	.0001	.0014
10	.02	.0001	.0015
11	.03	.0001	.0016
12	.01	0	.0016

RECORD SHEET 4: WATER CONTENT

Sample ID No.: P113782 / H3-58 B-8

Date of Test: 4/20

Laboratory:

Technician: MDS

Container Number	Mass of Container, W c (g)	Mass of Container + Wet Sample, W w (g)	Date/Time	Mass of Container + Dried Sample W d (g)
A-32	19.86	78.26	4/24 10:00	67.99
			4/22 9:30	67.93
			4/23 10:00	67.61
			4/24 8:30	67.63

Water Content (wet weight basis): 18.2%

RECORD SHEET 12.1: WET/DRY WEATHERING TEST T13 / C13

Sample ID No.: P113814 H3-81 B-9 /P113815 H3-82 B-9

Date and Time of Test Beginning: 4/19 8:00

Laboratory:

Technician: MDS

Mass of Test Specimen, $W_{w,t}$ (g): T13 297.01

Mass of Control Specimen, $W_{w,c}$ (g): C13 287.58

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	T13	146.91	147.12	C13	151.15	151.27
2		153.56	153.67		149.40	149.44
3		146.92	153.78		151.16	151.20
4		153.56	153.65		149.40	149.44
5		146.91	146.98		151.16	151.18
6		153.54	153.57		149.40	149.42
7		146.91	147.08		151.15	151.18
8		153.54	153.59		149.40	149.43
9		146.90	146.94		151.15	151.18
10		153.54	153.58		149.40	149.43
11		146.90	146.94		151.15	151.17
12		153.54	153.57		149.40	149.42

VISUAL OBSERVATIONS:

RECORD SHEET 12.2: WET/DRY WEATHERING TEST

Sample ID No.: P113814 H3-81 B-9

Dry Weight of Test Specimen, W d,t (g): T13 = 297.01 = 242.36

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	.21	.0009	.0009	.0004	.0004
2	.11	.0005	.0014	.0003	.0007
3	6.86	.0283	.0297	.0281	.0288
4	.09	.0004	.0301	.0002	.0290
5	.07	.0003	.0304	.0002	.0292
6	.03	.0001	.0305	0	.0292
7	.17	.0007	.0312	.0006	.0298
8	.05	.0002	.0314	.0001	.0299
9	.04	.0002	.0316	.0001	.0300
10	.04	.0002	.0318	.0001	.0301
11	.04	.0002	.0320	.0001	.0302
12	.03	.0001	.0321	0	.0302

RECORD SHEET 12.3: WET/DRY WEATHERING TEST

Sample ID No.: P113815 H3-82 B-9

Dry Weight of Control Specimen, W d,c (g): C13 = 287.58 = 234.67

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weigt Loss
1	.12	.0005	.0005
2	.04	.0002	.0007
3	.04	.0002	.0009
4	.04	.0002	.0011
5	.02	.0001	.0012
6	.02	.0001	.0013
7	.03	.0001	.0014
8	.03	.0001	.0015
9	.03	.0001	.0016
10	.03	.0001	.0017
11	.02	.0001	.0018
12	.02	.0001	.0019

RECORD SHEET 4: WATER CONTENT

Sample ID No.: P113785 H3-62 DUP. B-9

Date of Test: 4/21/89

Laboratory:

Technician: MDS

Container Number	Mass of Container, W c (g)	Mass of Container + Wet Sample, W w (g)	Date/Time	Mass of Container + Dried Sample W d (g)
A-80	19.47	62.82	/22 / 9:30	55.62
			/23 /10:00	54.92
			/24 / 8:30	54.91

Water Content (wet weight basis): 18.2%

RECORD SHEET 4: WATER CONTENT

Sample ID No.: P113785 H3-62 8-9

Date of Test: 4/20

Laboratory:

Technician: MDS

Container Number	Mass of Container, W c (g)	Mass of Container + Wet Sample, W w (g)	Date/Time	Mass of Container + Dried Sample W d (g)
A-61	20.10	16.94	4/24 10:00	66.71
			4/22 9:30	66.66
			4/23 10:00	66.50
			4/24 8:30	66.49

Water Content (wet weight basis): 18.4%

RECORD SHEET 12.1: WET/DRY WEATHERING TEST

Sample ID No.: P113458 H3-4-C3 T1 / P113459 H3 -4C-3 C1

Date and Time of Test Beginning: 4/18 8:00

Laboratory:

Technician: MPS

Mass of Test Specimen, $W_{w,t}$ (g): T1 312.62 = 256.35

Mass of Control Specimen, $W_{w,c}$ (g): C-1 294.10 = 241.16

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	T1	149.73	149.85	C1	149.81	149.92
2		146.62	146.73		156.73	156.82
3		149.73	149.82		149.81	149.88
4		146.63	146.68		156.74	156.78
5		149.72	149.76		149.81	149.85
6		146.61	146.66		156.74	156.77
7		149.72	149.78		149.82	149.85
8		146.62	146.64		156.74	156.75
9		149.72	149.76		149.82	149.85
10		146.62	146.64		156.74	156.75
11		149.71	149.75		149.80	149.83
12		146.62	146.65		156.74	156.75

VISUAL OBSERVATIONS:

RECORD SHEET 12.2: WET/DRY WEATHERING TEST

Sample ID No.: P113458 H3-4 C-3

Dry Weight of Test Specimen, W d,t (g): T1 312.62 = 256.35

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	.12	.0005	.0005	0	0
2	.11	.0004	.0009	0	0
3	.09	.0004	.0013	.0002	.0002
4	.05	.0002	.0015	0	.0002
5	.04	.0002	.0017	0	.0002
6	.05	.0002	.0019	.0001	.0003
7	.06	.0002	.0021	.0001	.0004
8	.02	.0001	.0022	.0001	.0005
9	.04	.0002	.0024	.0001	.0006
10	.02	.0001	.0025	.0001	.0007
11	.04	.0002	.0027	.0001	.0008
12	.03	.0001	.0028	.0001	.0009

RECORD SHEET 12.3: WET/DRY WEATHERING TEST

Sample ID No.: P113459 H3-4-C3

Dry Weight of Control Specimen, W d,c (g): C1 294.10 = 241.16

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weigt Loss
1	.11	.0005	.0005
2	.09	.0004	.0009
3	.06	.0002	.0011
4	.04	.0002	.0013
5	.04	.0002	.0015
6	.03	.0001	.0016
7	.03	.0001	.0017
8	.01	0	.0017
9	.03	.0001	.0018
10	.01	0	.0018
11	.03	.0001	.0019
12	.01	0	.0019

RECORD SHEET 4: WATER CONTENT

Sample ID No.: P113457 / H3-3 C-3

Date of Test: 4/20

Laboratory:

Technician: MPS

Container Number	Mass of Container, W c (g)	Mass of Container + Wet Sample, W w (g)	Date/Time	Mass of Container + Dried Sample W d (g)
A-1	20.25	69.89	4/21 10:00	61.73
			4/22 9:30	61.35
			4/23 10:00	60.97
			4/24 8:30	60.96

Water Content (wet weight basis): 18.0%

RECORD SHEET 12.1: WET/DRY WEATHERING TEST

Sample ID No.: P113530 H3-11 C-1 T2 / P113531 H3-11-C1 C2

Date and Time of Test Beginning: 4/18 8:00

Laboratory:

Technician: MPS

Mass of Test Specimen, $W_{w,t}$ (g): T2 317.53 = 261.33

Mass of Control Specimen, $W_{w,c}$ (g): C2 310.87 = 255.85

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	T2	162.25	162.39	C2	151.92	152.05
2		154.41	154.52		148.35	148.41
3		162.26	162.34		151.93	151.99
4		154.41	154.49		148.35	148.40
5		162.25	162.30		151.93	151.96
6		154.40	154.44		148.35	148.37
7		162.25	162.30		151.93	151.96
8		154.40	154.43		148.35	148.36
9		162.25	162.29		151.94	151.96
10		154.40	154.43		148.35	148.36
11		162.23	162.28		151.93	151.95
12		154.39	154.41		148.35	148.36

VISUAL OBSERVATIONS:

RECORD SHEET 12.2: WET/DRY WEATHERING TEST

Sample ID No.: P113530 H3-11 C-1

Dry Weight of Test Specimen, W d,t (g): T2 317.53 = 261.33

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	.19	.0007	.0007	.0002	.0002
2	.11	.0004	.0011	.0002	.0004
3	.08	.0003	.0014	.0001	.0005
4	.08	.0003	.0017	.0001	.0006
5	.05	.0002	.0019	.0001	.0007
6	.04	.0002	.0021	.0001	.0008
7	.05	.0002	.0023	.0001	.0009
8	.03	.0001	.0024	.0001	.0010
9	.04	.0002	.0026	.0001	.0011
10	.03	.0001	.0027	.0001	.0012
11	.05	.0002	.0029	.0001	.0013
12	.02	.0001	.0030	.0001	.0014

RECORD SHEET 12.3: WET/DRY WEATHERING TEST

Sample ID No.: P113531 H3-11-C1

Dry Weight of Control Specimen, W d,c (g): C2 310.87 = 255.85

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weigt Loss
1	.13	.0005	.0005
2	.06	.0002	.0007
3	.06	.0002	.0009
4	.05	.0002	.0011
5	.03	.0001	.0012
6	.02	.0001	.0013
7	.03	.0001	.0014
8	.01	0	.0014
9	.02	.0001	.0015
10	.01	0	.0015
11	.02	.0001	.0016
12	.01	0	.0016

RECORD SHEET 4: WATER CONTENT

Sample ID No.: P113463 / H3-8 C-1

Date of Test: 4/20

Laboratory:

Technician: MPS

Container Number	Mass of Container, W c (g)	Mass of Container + Wet Sample, W w (g)	Date/Time	Mass of Container + Dried Sample W d (g)
A-02	19.89	74.41	4/21 10:00	66.17
			4/22 9:30	65.22
			4/23 10:00	64.77
			4/24 8:30	64.75

Water Content (wet weight basis): 17.7%

RECORD SHEET 12.1: WET/DRY WEATHERING TEST T8 C8

Sample ID No.: P113714 H3-34 C-7 /P113715 H3-35 C-7

Date and Time of Test Beginning: 4/19 8:00

Laboratory:

Technician: MDS

Mass of Test Specimen, $W_{w,t}$ (g): T8 318.23

Mass of Control Specimen, $W_{w,c}$ (g): C8 305.95

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	T8	152.51	152.67	C8	146.85	146.98
2		148.87	148.94		147.24	147.30
3		152.51	152.59		146.86	146.92
4		148.86	148.93		147.24	147.29
5		152.51	152.57		146.85	146.91
6		148.86	148.93		147.23	147.28
7		152.50	152.55		146.86	146.91
8		148.86	148.93		147.23	147.28
9		152.50	152.55		146.86	146.89
10		148.87	148.93		147.25	147.29
11		152.50	152.53		146.86	146.89
12		148.87	148.90		147.25	147.26

VISUAL OBSERVATIONS:

RECORD SHEET 12.2: WET/DRY WEATHERING TEST

Sample ID No.: P113714 H3-34 C-7

Dry Weight of Test Specimen, W d,t (g): T8 318.23 = 264.13

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	.16	.0006	.0006	.0001	.0001
2	.07	.0003	.0007	.0001	.0002
3	.08	.0003	.0012	.0001	.0003
4	.07	.0003	.0015	.0001	.0004
5	.06	.0002	.0017	0	.0004
6	.07	.0003	.0020	.0001	.0005
7	.05	.0002	.0022	0	.0005
8	.07	.0003	.0025	.0001	.0006
9	.05	.0002	.0027	.0001	.0007
10	.06	.0002	.0029	0	.0007
11	.03	.0001	.0030	0	.0007
12	.03	.0001	.0031	.0001	.0008

RECORD SHEET 12.3: WET/DRY WEATHERING TEST

Sample ID No.: P113715 H3-35 C-7

Dry Weight of Control Specimen, W d,c (g): C8 305.95 = 253.94

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weigt Loss
1	.13	.0005	.0005
2	.06	.0002	.0007
3	.06	.0002	.0009
4	.05	.0002	.0011
5	.06	.0002	.0013
6	.05	.0002	.0015
7	.05	.0002	.0017
8	.05	.0002	.0019
9	.03	.0001	.0020
10	.04	.0002	.0022
11	.03	.0001	.0023
12	.01	0	.0023

HEET 4: WATER CONTENT

D No.: P113710 H3-30 C-7

Test: 4/20

ry:

an: MDS

er	Mass of Container, W c (g)	Mass of Container + Wet Sample, W w (g)	Date/Time	Mass of Container + Dried Sample W d (g)
	20.01	75.82	4/21 10:00	66.32
			4/22 9:30	66.32
			4/23 10:00	

tent (wet weight basis): 17.0%

RECORD SHEET 12.1: WET/DRY WEATHERING TEST

Sample ID No.: P113698 H3-23-C15 T5 / P113699 H3-23 C15 C5

Date and Time of Test Beginning: 4/18 8:00

Laboratory:

Technician: MPS

Mass of Test Specimen, $W_{w,t}$ (g): T5 303.98

Mass of Control Specimen, $W_{w,c}$ (g): C5 308.05

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	T5	150.75	150.90	C5	150.81	150.93
2		150.35	150.45		156.15	156.24
3		150.75	150.84		150.81	150.87
4		150.35	150.43		156.16	156.20
5		150.75	150.77		150.81	150.84
6		150.35	150.39		156.17	156.19
7		150.75	150.80		150.80	150.84
8		150.35	150.39		156.17	156.18
9		150.75	150.79		150.80	150.83
10		150.35	150.38		156.17	156.19
11		150.73	150.78		150.79	150.82
12		150.34	150.36		156.15	156.17

VISUAL OBSERVATIONS:

RECORD SHEET 12.2: WET/DRY WEATHERING TEST

Sample ID No.: P113698 H3-23-C15

Dry Weight of Test Specimen, W d,t (g): T5 303.98 = 234.06

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	.15	.0006	.0006	.0001	.0001
2	.10	.0004	.0010	0	.0001
3	.09	.0004	.0014	.0001	.0002
4	.08	.0003	.0017	.0001	.0003
5	.02	.0001	.0018	0	.0003
6	.04	.0002	.0020	.0001	.0004
7	.05	.0002	.0022	0	.0004
8	.04	.0002	.0024	.0002	.0006
9	.04	.0002	.0026	.0001	.0007
10	.03	.0001	.0027	0	.0007
11	.05	.0002	.0029	.0001	.0008
12	.02	.0001	.0030	0	.0008

RECORD SHEET 12.3: WET/DRY WEATHERING TEST

Sample ID No.: P113699 H3-23-C15

Dry Weight of Control Specimen, W d,c (g): 308.05 = 237.20

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weigt Loss
1	.12	.0005	.0005
2	.09	.0004	.0009
3	.06	.0003	.0012
4	.04	.0002	.0014
5	.03	.0001	.0015
6	.02	.0001	.0016
7	.04	.0002	.0018
8	.01	0	.0018
9	.03	.0001	.0019
10	.02	.0001	.0020
11	.03	.0001	.0021
12	.02	.0001	.0022

RECORD SHEET 12.1: WET/DRY WEATHERING TEST C-6

Sample ID No.: P113702 H3-26 C-16 T6/P113703 H3-26-C-16

Date and Time of Test Beginning: 4/18 8:00

Laboratory:

Technician: MPS

Mass of Test Specimen, W w,t (g): T6 329.29

Mass of Control Specimen, W w,c (g): C6 326.98

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	T6	149.85	150.02	C6	146.56	146.68
2		149.07	149.17		153.92	154.00
3		149.86	149.93		146.56	146.61
4		149.07	149.13		153.92	153.98
5		149.85	149.89		146.56	146.59
6		149.07	149.10		153.93	153.96
7		149.85	149.90		146.56	146.58
8		149.07	149.10		153.93	153.95
9		149.85	149.92		146.56	146.59
10		149.07	149.09		153.93	153.95
11		149.84	149.88		146.55	146.58
12		149.06	149.07		153.92	153.93

VISUAL OBSERVATIONS:

RECORD SHEET 12.2: WET/DRY WEATHERING TEST

Sample ID No.: P113702 H3-26 C-16

Dry Weight of Test Specimen, W d,t (g): T6= 329.29 = 278.25

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	.17	.0006	.0006	.0002	.0002
2	.10	.0004	.0010	.0001	.0003
3	.07	.0003	.0013	.0001	.0004
4	.06	.0002	.0015	0	.0004
5	.04	.0001	.0016	0	.0004
6	.03	.0001	.0017	0	.0004
7	.05	.0002	.0019	.0001	.0005
8	.03	.0001	.0020	0	.0005
9	.07	.0003	.0023	.0002	.0007
10	.02	.0001	.0024	0	.0007
11	.04	.0001	.0025	0	.0007
12	.01	0	.0025	0	.0007

RECORD SHEET 12.3: WET/DRY WEATHERING TEST

Sample ID No.: P113703 H3-26 C-16

Dry Weight of Control Specimen, W d,c (g): C6= 326.98 = 276.30

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weigt Loss
1	.12	.0004	.0004
2	.08	.0003	.0007
3	.05	.0002	.0009
4	.06	.0002	.0011
5	.03	.0001	.0012
6	.03	.0001	.0013
7	.02	.0001	.0014
8	.02	.0001	.0015
9	.03	.0001	.0016
10	.02	.0001	.0017
11	.03	.0001	.0018
12	.01	0	.0018

RECORD SHEET 4: WATER CONTENT

Sample ID No.: P113537/H3-17 C-16

Date of Test: 4/20

Laboratory:

Technician: MPS

Container Number	Mass of Container, W_c (g)	Mass of Container + Wet Sample, W_w (g)	Date/Time	Mass of Container + Dried Sample W_d (g)
A-8	20.25	78.12	4/21 10:00	69.47
			4/22 9:30	69.38
			4/23 10:00	69.14
			4/24 8:30	69.14

Water Content (wet weight basis): 15.5%

RECORD SHEET 12.1: WET/DRY WEATHERING TEST T7 C7

Sample ID No.: P113706 H3-28 C-17 / P113707 H3-28 C-17

Date and Time of Test Beginning: 4/18 8:00

Laboratory:

Technician: MDS

Mass of Test Specimen, W w,t (g): T7 326.32

Mass of Control Specimen, W w,c (g): C7 330.11

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	T7	152.32	152.45	C7	152.88	152.98
2		147.50	147.61		149.92	149.99
3		152.30	152.36		152.86	152.89
4		147.50	147.56		149.92	149.96
5		152.30	152.32		152.85	152.87
6		147.50	147.55		149.93	149.96
7		152.29	152.35		152.85	152.89
8		147.51	147.51		149.93	149.94
9		152.30	152.33		152.85	152.88
10		147.51	147.53		149.94	149.95
11		152.28	152.33		152.85	152.87
12		147.50	147.52		149.95	149.94

VISUAL OBSERVATIONS:

RECORD SHEET 12.2: WET/DRY WEATHERING TEST

Sample ID No.: P113706 H3-28 C-17

Dry Weight of Test Specimen, W d,t (g): T7 = 326.32 = 282.27

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	.13	.0005	.0005	.0001	.0001
2	.11	.0004	.0009	.0002	.0003
3	.06	.0002	.0011	.0001	.0004
4	.06	.0002	.0013	.0001	.0005
5	.02	.0001	.0014	0	.0005
6	.05	.0002	.0016	.0001	.0006
7	.06	.0002	.0018	.0001	.0007
8	.03	.0001	.0019	.0001	.0008
9	.03	.0001	.0020	0	.0008
10	.02	.0001	.0021	.0001	.0009
11	.05	.0002	.0023	.0001	.0010
12	.02	.0001	.0024	.0001	.0011

RECORD SHEET 12.3: WET/DRY WEATHERING TEST

Sample ID No.: P113707 H3-28 C-17

Dry Weight of Control Specimen, W d,c (g): C7 330.11 = 285.55

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weigt Loss
1	.10	.0004	.0004
2	.07	.0002	.0006
3	.03	.0001	.0007
4	.04	.0001	.0008
5	.02	.0001	.0009
6	.03	.0001	.0010
7	.04	.0001	.0011
8	.01	0	.0011
9	.03	.0001	.0012
10	.01	0	.0012
11	.02	.0001	.0013
12	.01	0	.0013

EET 4: WATER CONTENT*

No.: P113540 H3-20 C-17

est: 4/20

y:

n: MDS

r	Mass of Container, W c (g)	Mass of Container + Wet Sample, W w (g)	Date/Time	Mass of Container + Dried Sample W d (g)
	20.12	80.72	4/21 10:00	72.56
			4/22 9:30	72.55

:ent (wet weight basis): 13.5%

RECORD SHEET 11.1: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113796 (H3-74 B-6) & P113797 (H3-74 B-6)

Date and Time of Test Beginning: 4-18-89 @ 0800

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

Mass of Test Specimen, $W_{w,t}$ (g): 297.12

Mass of Control Specimen, $W_{w,c}$ (g): 254.44

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	1-T10	149.88	150.40	1-C10	144.79	144.99
2	2-T10	149.92	150.25	2-C10	148.34	148.48
3	1-T10	149.88	150.19	1-C10	144.79	144.90
4	2-T10	149.92	150.14	2-C10	148.32	148.44
5	1-T10	149.87	150.05	1-C10	144.77	144.86
6	2-T10	149.91	150.16	2-C10	148.33	148.39
7	1-T10	149.85	150.05	1-C10	144.76	144.83
8	2-T10	149.90	150.07	2-C10	148.32	148.38
9	1-T10	149.86	150.01	1-C10	144.77	144.81
10	2-T10	149.88	150.05	2-C10	148.31	148.36
11	1-T10	149.85	150.01	1-C10	144.76	144.81
12	2-T10	149.89	150.03	2-C10	148.30	148.35

VISUAL OBSERVATIONS:

RECORD SHEET 11.2: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113796 (H3-74 B-6) & P113797 (H3-74 B-6)

Dry Weight of Test Specimen, W d,t (g): 235.02

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	0.52	.0022	.0022	.0012	.0012
2	0.33	.0014	.0036	.0007	.0019
3	0.31	.0013	.0049	.0008	.0027
4	0.22	.0009	.0058	.0003	.0030
5	0.18	.0008	.0066	.0004	.0034
6	0.25	.0011	.0077	.0008	.0042
7	0.20	.0008	.0085	.0005	.0047
8	0.17	.0007	.0092	.0004	.0051
9	0.15	.0006	.0098	.0004	.0055
10	0.17	.0007	.0105	.0005	.0060
11	0.16	.0007	.0112	.0005	.0065
12	0.14	.0006	.0118	.0004	.0069

RECORD SHEET 11.3: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113796 (H3-74 B-6) & P113797 (H3-74 B-6)

Dry Weight of Control Specimen, W d,c (g): 201.26

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weight Loss
1	0.20	.0010	.0010
2	0.14	.0007	.0017
3	0.11	.0005	.0022
4	0.12	.0006	.0028
5	0.09	.0004	.0032
6	0.06	.0003	.0035
7	0.07	.0003	.0038
8	0.06	.0003	.0041
9	0.04	.0002	.0043
10	0.05	.0002	.0045
11	0.05	.0002	.0047
12	0.05	.0002	.0049

RECORD SHEET 11.1: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113793 (H3-70 B-6 DUP1) & P113794 (H3-71 B-6 DUP1)

Date and Time of Test Beginning: 4-18-89 @ 0800

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

Mass of Test Specimen, $W_{w,t}$ (g): 283.99

Mass of Control Specimen, $W_{w,c}$ (g): 286.34

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	1-T9	149.45	149.71	1-C9	147.66	147.87
2	2-T9	149.80	150.04	2-C9	142.54	142.65
3	1-T9	149.44	149.65	1-C9	147.65	147.74
4	2-T9	149.79	149.94	2-C9	142.52	142.61
5	1-T9	149.44	149.70	1-C9	147.65	147.71
6	2-T9	149.79	149.92	2-C9	142.51	142.58
7	1-T9	149.42	149.55	1-C9	147.63	147.69
8	2-T9	149.78	149.91	2-C9	142.52	142.57
9	1-T9	149.42	149.55	1-C9	147.63	147.68
10	2-T9	149.77	149.91	2-C9	142.51	142.56
11	1-T9	149.42	149.53	1-C9	147.63	147.66
12	2-T9	149.78	149.89	2-C9	142.51	142.55

VISUAL OBSERVATIONS:

RECORD SHEET 11.2: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113793 (H3-70 B-6 DUP) & P113794 (H3-71 B-6 DUP)

Dry Weight of Test Specimen, W d,t (g): 228.61

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	0.26	.0011	.0011	.0002	.0002
2	0.24	.0010	.0021	.0005	.0007
3	0.21	.0009	.0030	.0005	.0012
4	0.15	.0007	.0037	.0003	.0015
5	0.26	.0011	.0048	.0008	.0023
6	0.13	.0006	.0054	.0003	.0026
7	0.13	.0006	.0060	.0003	.0029
8	0.13	.0006	.0066	.0004	.0033
9	0.13	.0006	.0072	.0004	.0037
10	0.14	.0006	.0078	.0004	.0041
11	0.11	.0005	.0083	.0004	.0045
12	0.11	.0005	.0088	.0003	.0048

RECORD SHEET 11.3: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113793 (H3-70 B-6 DUP) & P113794 (H3-71 B-6 DUP)

Dry Weight of Control Specimen, W d,c (g): 230.50

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weight Loss
1	0.21	.0009	.0009
2	0.11	.0005	.0014
3	0.09	.0004	.0018
4	0.09	.0004	.0022
5	0.06	.0003	.0025
6	0.07	.0003	.0028
7	0.06	.0003	.0031
8	0.05	.0002	.0033
9	0.05	.0002	.0035
10	0.05	.0002	.0037
11	0.03	.0001	.0038
12	0.04	.0002	.0040

RECORD SHEET 11.1: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113082 (H3-77 B-7) & P113803 (H3-77 B-7)

Date and Time of Test Beginning: 4-18-89 @ 0800

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

Mass of Test Specimen, $W_{w,t}$ (g): 280.23

Mass of Control Specimen, $W_{w,c}$ (g): 281.82

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	1-T11	149.98	150.49	1-C11	147.88	148.09
2	2-T11	149.67	150.02	2-C11	150.30	150.42
3	1-T11	149.98	150.31	1-C11	147.86	147.96
4	2-T11	149.66*	143.92	2-C11	150.29	150.37
5	1-T11	149.96	150.50	1-C11	147.85	147.92
6	2-T11	143.57	143.99	2-C11	150.28	150.34
7	1-T11	149.95	150.26	1-C11	147.85	147.90
8	2-T11	143.56	143.86	2-C11	150.28	150.32
9	1-T11	149.95	150.51	1-C11	147.85	147.89
10	2-T11	143.55	144.21	2-C11	150.26	150.32
11	1-T11	149.95	150.62	1-C11	147.84	147.89
12	2-T11	143.55	145.19	2-C11	150.27	150.30

VISUAL OBSERVATIONS: *Replacement beaker @ 143.58g.

RECORD SHEET 11.2: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113802 (H3-77 B-7) & P113803 (H3-77 B-7)

Dry Weight of Test Specimen, W d,t (g): 231.47

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	0.51	.0022	.0022	.0013	.0013
2	0.35	.0015	.0037	.0010	.0023
3	0.33	.0014	.0051	.0010	.0033
4	0.34	.0015	.0066	.0012	.0045
5	0.54	.0023	.0089	.0020	.0065
6	0.42	.0018	.0107	.0015	.0080
7	0.31	.0013	.0120	.0011	.0091
8	0.30	.0013	.0133	.0011	.0102
9	0.56	.0024	.0157	.0022	.0124
10	0.66	.0028	.0185	.0025	.0149
11	0.67	.0029	.0214	.0027	.0176
12	1.64	.0071	.0285	.0070	.0246

RECORD SHEET 11.3: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113802 (H3-77 B-7) & P113803 (H3-77 B-7)

Dry Weight of Control Specimen, W d,c (g): 232.78

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weight Loss
1	0.21	.0009	.0009
2	0.12	.0005	.0014
3	0.10	.0004	.0018
4	0.08	.0003	.0021
5	0.07	.0003	.0024
6	0.06	.0003	.0027
7	0.05	.0002	.0029
8	0.04	.0002	.0031
9	0.04	.0002	.0033
10	0.06	.0003	.0036
11	0.05	.0002	.0038
12	0.03	.0001	.0039

RECORD SHEET 11.1: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113812 (H3-80 B-8) & P113813 (H3-80 B-8)

Date and Time of Test Beginning: 4-18-89 @ 0800

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

Mass of Test Specimen, $W_{w,t}$ (g): 301.33

Mass of Control Specimen, $W_{w,c}$ (g): 293.85

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	1-T12	148.76	149.20	1-C12	144.93	145.07
2	2-T12	148.69	149.01	2-C12	149.39	149.46
3	1-T12	148.75	149.08	1-C12	144.92	144.99
4	2-T12	148.70	149.05	2-C12	149.38	149.43
5	1-T12	148.75	149.16	1-C12	144.93	144.96
6	2-T12	148.71	149.62	2-C12	149.37	149.41
7	1-T12	148.73	149.68	1-C12	144.91	144.96
8	2-T12	148.69	149.78	2-C12	149.39	149.40
9	1-T12	148.74	150.10	1-C12	144.92	144.95
10	2-T12	148.68	150.75	2-C12	149.36	149.40
11	1-T12	148.74	152.14	1-C12	144.93	144.94
12	2-T12	148.68	171.23	2-C12	149.36	149.40

VISUAL OBSERVATIONS:

RECORD SHEET 11.2: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113812 (H3-80 B-8) & P113813 (H3-80 B-8)

Dry Weight of Test Specimen, W d,t (g): 246.49

TEST SPECIMEN

246.49

Cycle No.	Weight Loss (g)	Relative Weight Loss		Cor	ht Loss
			Cumulative		ative
1	0.46	.0019	.0019		
2	0.32	.0013	.0032	.0010	.0023
3	0.33	.0013	.0045	.0010	.0033
4	0.35	.0014	.0059	.0012	.0045
5	0.41	.0017	.0076	.0016	.0061
6	0.91	.0037	.0113	.0035	.0096
7	0.95	.0035	.0148	.0033	.0129
8	1.09	.0044	.0192	.0042	.0171
9	1.36	.0055	.0247	.0054	.0225
10	2.07	.0084	.0331	.0082	.0307
11	3.40	.0138	.0469	.0138	.0445
12	22.55	.0915	.1384	.0913	.1358

RECORD SHEET 11.3: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113812 (H3-80 B-8) & P113813 (H3-80 B-8)

Dry Weight of Control Specimen, W d,c (g): 240.37

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weight Loss
1	0.14	.0006	.0006
2	0.07	.0003	.0009
3	0.07	.0003	.0012
4	0.05	.0002	.0014
5	0.03	.0001	.0015
6	0.04	.0002	.0017
7	0.05	.0002	.0019
8	0.05	.0002	.0021
9	0.03	.0001	.0022
10	0.04	.0002	.0024
11	0.01	.0000	.0024
12	0.04	.0002	.0026

RECORD SHEET 11.1: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113816 (H3-83 B-9) & P113817 (H3-84 B-9)

Date and Time of Test Beginning: 4-18-89 @ 0800

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

Mass of Test Specimen, $W_{w,t}$ (g): 281.37

Mass of Control Specimen, $W_{w,c}$ (g): 312.94

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	1-T13	151.80	152.38	1-C13	150.74	150.87
2	2-T13	146.60	147.19	2-C13	143.78	143.86
3	1-T13	151.79	152.32	1-C13	150.74	150.79
4	2-T13	146.59	147.13	2-C13	143.77	143.82
5	1-T13	151.78	152.72	1-C13	150.75	150.77
6	2-T13	146.57	147.91	2-C13	143.77	143.80
7	1-T13	151.77	153.08	1-C13	150.72	150.76
8	2-T13	146.57	148.29	2-C13	143.76	143.80
9	1-T13	151.77	157.41	1-C13	150.73	150.75
10	2-T13	146.57	156.42	2-C13	143.75	143.79
11	1-T13	151.77	158.12	1-C13	150.73	150.75
12	2-T13	146.57	174.16	2-C13	143.76	143.78

VISUAL OBSERVATIONS:

RECORD SHEET 11.2: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113816 (H3-83 B-9) & P113817 (H3-84 B-9)

Dry Weight of Test Specimen, W d,t (g): 229.88

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	0.58	.0025	.0025	.0020	.0020
2	0.59	.0026	.0051	.0023	.0043
3	0.53	.0023	.0074	.0021	.0064
4	0.54	.0023	.0097	.0021	.0085
5	0.94	.0041	.0138	.0040	.0125
6	1.34	.0058	.0196	.0057	.0182
7	1.31	.0057	.0253	.0055	.0237
8	1.72	.0075	.0328	.0073	.0310
9	5.64	.0245	.0573	.0244	.0554
10	9.85	.0428	.1001	.0426	.0980
11	6.35	.0276	.1277	.0275	.1255
12	27.59	.1200	.2477	.1199	.2454

RECORD SHEET 11.3: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113816 (H3-83 B-9) & P113817 (H3-84 B-9)

Dry Weight of Control Specimen, W d,c (g): 255.67

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weight Loss
1	0.13	.0005	.0005
2	0.08	.0003	.0008
3	0.05	.0002	.0010
4	0.05	.0002	.0012
5	0.02	.0001	.0013
6	0.03	.0001	.0014
7	0.04	.0002	.0016
8	0.04	.0002	.0018
9	0.02	.0001	.0019
10	0.04	.0002	.0021
11	0.02	.0001	.0022
12	0.02	.0001	.0023

RECORD SHEET 11.1: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113689 (H3-43 B-21) & P113690 (H3-43 B-21)

Date and Time of Test Beginning: 4-18-89 @ 0800

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

Mass of Test Specimen, W w,t (g): 277.22

Mass of Control Specimen, W w,c (g): 274.24

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	1-T3	150.87	151.33	1-C3	151.82	152.05
2	2-T3	150.43	150.79	2-C3	150.89	151.05
3	1-T3	150.85	151.11	1-C3	151.80	151.92
4	2-T3	150.44	150.68	2-C3	150.89	150.97
5	1-T3	150.85	151.14	1-C3	151.81	151.89
6	2-T3	150.42	150.60	2-C3	150.89	150.95
7	1-T3	150.83	151.03	1-C3	151.78	151.86
8	2-T3	150.42	150.59	2-C3	150.86	150.93
9	1-T3	150.83	151.02	1-C3	151.78	151.83
10	2-T3	150.40	150.60	2-C3	150.86	150.92
11	1-T3	150.83	151.02	1-C3	151.78	151.83
12	2-T3	150.41	151.15	2-C3	150.88	150.92

VISUAL OBSERVATIONS:

RECORD SHEET 11.2: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113689 (H3-43 B-21) & P113690 (H3-43 B-21)

Dry Weight of Test Specimen, W d,t (g): 233.97

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	0.46	.0020	.0020	.0010	.0010
2	0.36	.0015	.0035	.0008	.0018
3	0.26	.0011	.0046	.0006	.0024
4	0.24	.0010	.0056	.0007	.0031
5	0.29	.0012	.0068	.0009	.0040
6	0.18	.0008	.0076	.0005	.0045
7	0.20	.0008	.0084	.0005	.0050
8	0.17	.0007	.0091	.0004	.0054
9	0.19	.0008	.0099	.0006	.0060
10	0.20	.0008	.0107	.0005	.0065
11	0.19	.0008	.0115	.0006	.0071
12	0.74	.0032	.0147	.0030	.0101

RECORD SHEET 11.3: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113689 (H3-43 B-21) & P113690 (H3-43 B-21)

Dry Weight of Control Specimen, W d,c (g): 231.46

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weight Loss
1	0.23	.0010	.0010
2	0.16	.0007	.0017
3	0.12	.0005	.0022
4	0.08	.0003	.0025
5	0.08	.0003	.0028
6	0.06	.0003	.0031
7	0.08	.0003	.0034
8	0.07	.0003	.0037
9	0.05	.0002	.0039
10	0.06	.0003	.0042
11	0.05	.0002	.0044
12	0.04	.0002	.0046

RECORD SHEET 11.1: FREEZE/THAW WEATHERING TEST

Test

Sample ID No.: P113693 (H3-45 B-22) & P113694 (H3-46 B-22)

Date and Time of Test Beginning: 4-18-89 @ 0800

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

Mass of Test Specimen, $W_{w,t}$ (g): 279.64

Mass of Control Specimen, $W_{w,c}$ (g): 276.28

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	1-T4	145.50	145.98	1-C4	145.76	146.08
2	2-T4	148.68	148.99	2-C4	146.48	146.68
3	1-T4	145.49	145.83	1-C4	145.74	145.92
4	2-T4	148.68	149.05	2-C4	146.47	146.58
5	1-T4	145.48	145.85	1-C4	145.74	145.87
6	2-T4	148.67	149.12	2-C4	146.47	146.66
7	1-T4	145.47	145.91	1-C4	145.72	145.84
8	2-T4	148.66	149.14	2-C4	146.45	146.53
9	1-T4	145.47	145.83	1-C4	145.72	145.78
10	2-T4	148.66	149.35	2-C4	146.45	146.51
11	1-T4	145.47	146.09	1-C4	145.73	145.80
12	2-T4	148.65	149.15	2-C4	146.45	146.52

VISUAL OBSERVATIONS:

RECORD SHEET 11.2: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113693 (H3-45 B-22) & P113694 (H3-46 B-22)

Dry Weight of Test Specimen, W d,t (g): 224.55

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	0.48	.0021	.0021	.0007	.0007
2	0.31	.0014	.0035	.0005	.0012
3	0.34	.0015	.0050	.0007	.0019
4	0.37	.0016	.0066	.0011	.0030
5	0.37	.0016	.0082	.0010	.0040
6	0.45	.0020	.0102	.0011	.0051
7	0.44	.0020	.0122	.0015	.0066
8	0.48	.0021	.0143	.0017	.0083
9	0.36	.0016	.0159	.0013	.0096
10	0.69	.0031	.0190	.0028	.0124
11	0.62	.0028	.0218	.0025	.0149
12	0.50	.0022	.0240	.0019	.0168

RECORD SHEET 11.3: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113693 (H3-45 B-22) & P113694 (H3-46 B-22)

Dry Weight of Control Specimen, W d,c (g): 221.85

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weight Loss
1	0.32	.0014	.0014
2	0.20	.0090	.0023
3	0.18	.0008	.0031
4	0.11	.0005	.0036
5	0.13	.0006	.0042
6	0.19	.0009	.0051
7	0.12	.0005	.0056
8	0.08	.0004	.0060
9	0.06	.0003	.0063
10	0.06	.0003	.0066
11	0.07	.0003	.0069
12	0.07	.0003	.0072

RECORD SHEET 11.1: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113532 (H3-12 C-1) & P113533 (H3-13 C-1)

Date and Time of Test Beginning: 4-18-89 @ 0800

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

Mass of Test Specimen, $W_{w,t}$ (g): 326.69

Mass of Control Specimen, $W_{w,c}$ (g): 343.36

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	1-T2	146.10	146.35	1-C2	155.40	155.51
2	2-T2	147.83	148.00	2-C2	152.70	152.76
3	1-T2	146.09	146.26	1-C2	155.39	155.45
4	2-T2	147.83	147.97	2-C2	152.70	152.72
5	1-T2	146.09	146.23	1-C2	155.39	155.42
6	2-T2	147.82	147.94	2-C2	152.68	152.72
7	1-T2	146.07	146.19	1-C2	155.38	155.42
8	2-T2	147.81	147.92	2-C2	152.67	152.72
9	1-T2	146.08	146.18	1-C2	155.39	155.40
10	2-T2	147.80	147.91	2-C2	152.66	152.70
11	1-T2	146.08	146.18	1-C2	155.40	155.41
12	2-T2	147.81	147.90	2-C2	152.67	152.69

VISUAL OBSERVATIONS:

RECORD SHEET 11.2: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113532 (H3-12 C-1) & P113533 (H3-13 C-1)

Dry Weight of Test Specimen, W d,t (g): 268.87

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	0.25	.0009	.0009	.0005	.0005
2	0.17	.0006	.0015	.0004	.0009
3	0.17	.0006	.0021	.0004	.0013
4	0.14	.0005	.0026	.0004	.0017
5	0.14	.0005	.0031	.0004	.0021
6	0.12	.0004	.0035	.0003	.0024
7	0.12	.0004	.0039	.0003	.0027
8	0.11	.0004	.0043	.0002	.0029
9	0.10	.0004	.0047	.0003	.0032
10	0.11	.0004	.0051	.0003	.0035
11	0.10	.0004	.0055	.0004	.0039
12	0.09	.0003	.0058	.0002	.0041

RECORD SHEET 11.3: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113532 (H3-12 C-1) & P113533 (H3-13 C-1)

Dry Weight of Control Specimen, W d,c (g): 282.58

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weight Loss
1	0.11	.0004	.0004
2	0.06	.0002	.0006
3	0.06	.0002	.0008
4	0.02	.0001	.0009
5	0.03	.0001	.0010
6	0.04	.0001	.0011
7	0.04	.0001	.0012
8	0.05	.0002	.0014
9	0.01	.0001	.0015
10	0.04	.0001	.0016
11	0.01	.0000	.0016
12	0.02	.0001	.0017

RECORD SHEET 11.1: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113460 (H3-5 C-3) P113461 (H3-6 C-3)

Date and Time of Test Beginning: 4-18-89 @ 0800

Laboratory: SOLID WASTE (RCRA) NUS

Technician: D. AHEARN

Mass of Test Specimen, $W_{w,t}$ (g): 312.98

Mass of Control Specimen, $W_{w,c}$ (g): 308.86

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	1-T1	153.11	153.69	1-C1	151.10	151.29
2	2-T1	149.89	150.48	2-C1	147.72	147.82
3	1-T1	153.09	153.42	1-C1	151.09	151.17
4	2-T1	149.88	150.13	2-C1	147.72	147.76
5	1-T1	153.09	153.35	1-C1	151.08	151.13
6	2-T1	149.88	150.18	2-C1	147.71	147.74
7	1-T1	153.07	153.28	1-C1	151.06	151.12
8	2-T1	149.88	150.07	2-C1	147.70	147.74
9	1-T1	153.08	153.36	1-C1	151.07	151.10
10	2-T1	149.87	150.05	2-C1	147.69	147.74
11	1-T1	153.08	153.28	1-C1	151.07	151.10
12	2-T1	149.87	150.13	2-C1	147.69	147.72

VISUAL OBSERVATIONS:

RECORD SHEET 11.2: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113460 H3-5 C-3

Dry Weight of Test Specimen, W d,t (g): 256.64

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	0.58	.0023	.0023	.0016	.0016
2	0.59	.0023	.0046	.0019	.0035
3	0.33	.0013	.0059	.0010	.0045
4	0.25	.0010	.0069	.0008	.0053
5	0.26	.0010	.0079	.0008	.0061
6	0.30	.0012	.0091	.0011	.0072
7	0.21	.0008	.0099	.0006	.0078
8	0.19	.0007	.0106	.0006	.0084
9	0.28	.0011	.0117	.0010	.0094
10	0.18	.0007	.0124	.0005	.0099
11	0.20	.0008	.0132	.0007	.0106
12	0.26	.0010	.0142	.0011	.0117

RECORD SHEET 11.3: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113461 H3-6 C-3

Dry Weight of Control Specimen, W d,c (g): 253.26

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weight Loss
1	0.19	0.0007	0.0007
2	0.10	0.0004	0.0011
3	0.08	0.0003	0.0014
4	0.04	0.0002	0.0016
5	0.05	0.0002	0.0018
6	0.03	0.0001	0.0019
7	0.06	0.0002	0.0021
8	0.04	0.0002	0.0023
9	0.03	0.0001	0.0024
10	0.05	0.0002	0.0024
11	0.03	0.0001	0.0025
12	0.03	0.0001	0.0026

RECORD SHEET 11.1: FREEZE/THAW WEATHERING TEST Test

Sample ID No.: P113716 (H3-36 C-7) & P113717 (H3-36 C-7)

Date and Time of Test Beginning: 4-18-89 @ 0800

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

Mass of Test Specimen, $W_{w,t}$ (g): 301.53

Mass of Control Specimen, $W_{w,c}$ (g): 324.79

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	1-T8	148.24	148.63	1-C8	144.71	144.93
2	2-T8	151.35	151.52	2-C8	149.38	149.49
3	1-T8	148.22	148.37	1-C8	144.71	144.78
4	2-T8	151.34	151.47	2-C8	149.37	149.45
5	1-T8	148.22	148.35	1-C8	144.70	144.76
6	2-T8	151.34	151.45	2-C8	149.38	149.42
7	1-T8	148.20	148.33	1-C8	144.69	144.74
8	2-T8	151.33	151.45	2-C8	149.37	149.41
9	1-T8	148.21	148.43	1-C8	144.68	144.73
10	2-T8	151.32	151.43	2-C8	149.37	149.41
11	1-T8	148.21	148.31	1-C8	144.69	144.72
12	2-T8	151.32	151.42	2-C8	149.37	149.40

VISUAL OBSERVATIONS:

RECORD SHEET 11.2: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113716 (H3-36 C-7) & P113717 (H3-36 C-7)

Dry Weight of Test Specimen, W d,t (g): 250.27

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	0.39	.0016	.0016	.0008	.0008
2	0.17	.0007	.0023	.0003	.0011
3	0.15	.0006	.0029	.0003	.0014
4	0.13	.0005	.0034	.0002	.0016
5	0.13	.0005	.0039	.0003	.0019
6	0.11	.0004	.0043	.0003	.0022
7	0.13	.0005	.0048	.0003	.0025
8	0.12	.0005	.0053	.0004	.0029
9	0.21	.0008	.0061	.0006	.0035
10	0.11	.0004	.0065	.0003	.0038
11	0.10	.0004	.0069	.0003	.0041
12	0.10	.0004	.0073	.0003	.0044

RECORD SHEET 11.3: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113716 (H3-36 C-7) & P113717 (H3-36 C-7)

Dry Weight of Control Specimen, W d,c (g): 269.58

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weight Loss
1	0.22	.0008	.0008
2	0.11	.0004	.0012
3	0.07	.0003	.0015
4	0.08	.0003	.0018
5	0.06	.0002	.0020
6	0.04	.0001	.0021
7	0.05	.0002	.0023
8	0.04	.0001	.0024
9	0.05	.0002	.0026
10	0.04	.0001	.0027
11	0.03	.0001	.0028
12	0.03	.0001	.0029

RECORD SHEET 11.1: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113700 (H3-24 C-15) & P113701 (H3-25 C-15)

Date and Time of Test Beginning: 4-18-89 @ 0800

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

Mass of Test Specimen, $W_{w,t}$ (g): 328.91

Mass of Control Specimen, $W_{w,c}$ (g): 313.42

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	1-T5	152.95	153.30	1-C5	148.26	148.50
2	2-T5	151.84	152.03	2-C5	150.28	150.37
3	1-T5	152.93	153.11	1-C5	148.25	148.31
4	2-T5	151.83	151.98	2-C5	150.27	150.33
5	1-T5	152.93	153.08	1-C5	148.24	148.28
6	2-T5	151.83	151.96	2-C5	150.27	150.30
7	1-T5	152.91	153.04	1-C5	148.21	148.27
8	2-T5	151.83	151.94	2-C5	150.26	150.30
9	1-T5	152.89	153.05	1-C5	148.23	148.26
10	2-T5	151.82	151.92	2-C5	150.25	150.29
11	1-T5	152.92	153.02	1-C5	148.23	148.25
12	2-T5	151.82	151.91	2-C5	150.28	150.28

VISUAL OBSERVATIONS:

RECORD SHEET 11.2: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113700 (H3-24 C-15) & P113701 (H3-25 C-15)

Dry Weight of Test Specimen, W d,t (g): 253.26

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	0.35	.0014	.0014	.0004	.0004
2	0.19	.0007	.0021	.0003	.0007
3	0.18	.0007	.0028	.0005	.0012
4	0.16	.0006	.0034	.0004	.0016
5	0.15	.0006	.0040	.0004	.0020
6	0.13	.0005	.0045	.0004	.0024
7	0.13	.0005	.0050	.0003	.0027
8	0.11	.0004	.0054	.0002	.0029
9	0.16	.0006	.0060	.0005	.0034
10	0.10	.0004	.0064	.0002	.0036
11	0.10	.0004	.0068	.0003	.0039
12	0.09	.0003	.0071	.0003	.0042

RECORD SHEET 11.3: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113700 (H3-24 C-15) & P113701 (H3-25 C-15)

Dry Weight of Control Specimen, W d,c (g): 241.33

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weight Loss
1	0.24	.0010	.0010
2	0.09	.0004	.0014
3	0.06	.0002	.0016
4	0.06	.0002	.0018
5	0.06	.0002	.0020
6	0.03	.0001	.0021
7	0.06	.0002	.0023
8	0.04	.0002	.0025
9	0.03	.0001	.0026
10	0.04	.0002	.0028
11	0.02	.0001	.0029
12	0.00	.0000	.0029

RECORD SHEET 11.1: FREEZE/THAW WEATHERING TEST Test

Sample ID No.: P113704 (H3-27 C-16) & P113705 (H3-27 C-16)

Date and Time of Test Beginning: 4-18-89 @ 0800

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

Mass of Test Specimen, $W_{w,t}$ (g): 328.35

Mass of Control Specimen, $W_{w,c}$ (g): 330.15

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	1-T6	144.11	144.70	1-C6	154.24	154.43
2	2-T6	153.75	154.29	2-C6	146.31	146.41
3	1-T6	144.10	144.51	1-C6	154.23	154.31
4	2-T6	153.75	154.07	2-C6	146.31	146.37
5	1-T6	144.09	144.43	1-C6	154.23	154.27
6	2-T6	153.75	154.16	2-C6	146.32	146.35
7	1-T6	144.07	144.41	1-C6	154.20	154.26
8	2-T6	153.74	153.95	2-C6	146.29	146.36
9	1-T6	144.07	144.37	1-C6	154.22	154.25
10	2-T6	153.73	154.04	2-C6	146.28	146.34
11	1-T6	144.08	144.50	1-C6	154.21	154.24
12	2-T6	153.74	160.56	2-C6	146.29	146.33

VISUAL OBSERVATIONS:

RECORD SHEET 11.2: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113704 (H3-27 C-16) & P113705 (H3-27 C-16)

Dry Weight of Test Specimen, W d,t (g): 277.46

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	0.59	.0021	.0021	.0014	.0014
2	0.54	.0019	.0040	.0015	.0029
3	0.41	.0015	.0055	.0012	.0041
4	0.32	.0011	.0066	.0009	.0050
5	0.34	.0012	.0078	.0011	.0061
6	0.41	.0015	.0093	.0014	.0075
7	0.34	.0012	.0105	.0010	.0085
8	0.21	.0008	.0113	.0006	.0091
9	0.30	.0011	.0124	.0010	.0101
10	0.31	.0011	.0135	.0009	.0110
11	0.42	.0015	.0150	.0014	.0124
12	0.82	.0029	.0179	.0028	.0152

RECORD SHEET 11.3: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113704 (H3-27 C-16) & P113705 (H3-27 C-16)

Dry Weight of Control Specimen, W d,c (g): 278.98

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weight Loss
1	0.19	.0007	.0007
2	0.10	.0004	.0011
3	0.08	.0003	.0014
4	0.06	.0002	.0016
5	0.04	.0001	.0017
6	0.03	.0001	.0018
7	0.06	.0002	.0020
8	0.07	.0002	.0022
9	0.03	.0001	.0023
10	0.06	.0002	.0025
11	0.03	.0001	.0026
12	0.04	.0001	.0027

RECORD SHEET 11.1: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113708 (H3-29 C-17) & P113709 Test (H3-29 C-17)

Date and Time of Test Beginning: 4-18-89 @ 0800

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

Mass of Test Specimen, $W_{w,t}$ (g): 350.50

Mass of Control Specimen, $W_{w,c}$ (g): 327.09

Cycle No.	Test Specimen			Control Specimen		
	Beaker No.	Mass of Beaker, $W_{b,t}$ (g)	Mass of Beaker + Residue, $W_{br,t}$ (g)	Beaker No.	Mass of Beaker, $W_{b,c}$ (g)	Mass of Beaker + Residue, $W_{br,c}$ (g)
1	1-T7	154.48	154.77	1-C7	151.57	151.74
2	2-T7	152.06	152.22	2-C7	154.63	154.70
3	1-T7	154.47	154.64	1-C7	151.56	151.62
4	2-T7	152.05	152.23	2-C7	154.63	154.68
5	1-T7	154.46	154.79	1-C7	151.57	151.59
6	2-T7	152.04	152.23	2-C7	154.63	154.65
7	1-T7	154.45	154.60	1-C7	151.55	151.58
8	2-T7	152.03	152.21	2-C7	154.63	154.66
9	1-T7	154.47	154.61	1-C7	151.57	151.58
10	2-T7	152.02	152.20	2-C7	154.62	154.65
11	1-T7	154.45	154.58	1-C7	151.56	151.57
12	2-T7	152.03	152.20	2-C7	154.63	154.64

VISUAL OBSERVATIONS:

RECORD SHEET 11.2: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113708 (H3-29 C-17) & P113709 (H3-29 C-17)

Dry Weight of Test Specimen, W d,t (g): 303.18

TEST SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss		Corrected Relative Weight Loss	
			Cumulative		Cumulative
1	0.29	.0010	.0010	.0004	.0004
2	0.16	.0005	.0015	.0003	.0007
3	0.17	.0006	.0021	.0004	.0011
4	0.18	.0006	.0027	.0004	.0015
5	0.33	.0011	.0038	.0010	.0025
6	0.19	.0006	.0044	.0005	.0030
7	0.15	.0005	.0049	.0004	.0034
8	0.18	.0006	.0055	.0007	.0041
9	0.14	.0005	.0060	.0005	.0046
10	0.18	.0006	.0066	.0005	.0051
11	0.13	.0004	.0070	.0004	.0055
12	0.17	.0006	.0076	.0006	.0061

RECORD SHEET 11.3: FREEZE/THAW WEATHERING TEST

Sample ID No.: P113708 (H3-29 C-17) & P113709 (H3-27 C-17)

Dry Weight of Control Specimen, W d,c (g): 282.93

CONTROL SPECIMEN

Cycle No.	Weight Loss (g)	Relative Weight Loss	Cumulative Relative Weight Loss
1	0.17	.0006	.0006
2	0.07	.0002	.0008
3	0.06	.0002	.0010
4	0.05	.0002	.0012
5	0.02	.0001	.0013
6	0.02	.0001	.0014
7	0.03	.0001	.0015
8	0.03	.0001	.0016
9	0.01	.0000	.0016
10	0.03	.0001	.0017
11	0.01	.0000	.0017
12	0.01	.0000	.0017

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RECORD SHEET 7: ACID NEUTRALIZATION CAPACITY

Sample ID No.: P113777 H3-50 B-6

Date of Test: June 2-4, 1989

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

SECTION 7.2.1

pH in Centrifuge Tube No. 1: 31. 8.8

pH in Centrifuge Tube No. 2: 32. 5.6

pH in Centrifuge Tube No. 3: 33. NSQ SUPERNATE (TOO REACTIVE) *1

Acid Addition Schedule Chosen: #3 MODIFIED *2

SECTION 7.2.2

Room Temperature (oC): 20°C

Centrifuge Tube No. 3	pH
#23	8.3
#24	6.1
#25	5.6
#26	5.6
#27	4.8
#28	3.3
#29	1.1
#30	0.6
#31	0.4
#32	0.3
#33	0.2

All test results start reporting at 6 ml 2N HNO_3, then increase by 2 ml.

*1 SEE FOOTNOTE P113463

*2 REF. FOOTNOTE P113457

RECORD SHEET 7: ACID NEUTRALIZATION CAPACITY

Sample ID No.: P113788 H3-65 B-6 DUP

Date of Test: June 5-7, 1989

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

SECTION 7.2.1

pH in Centrifuge Tube No. 1: 43. 9.3

pH in Centrifuge Tube No. 2: 44. 5.6

pH in Centrifuge Tube No. 3: 45. NSQ SUPERNATE (TOO REACTIVE) *1

Acid Addition Schedule Chosen: #3 MODIFIED *2

SECTION 7.2.2

Room Temperature (oC): 20°C

Centrifuge Tube No.	pH
#23	8.7
#24	5.8
#25	5.6
#26	5.2
#27	4.7
#28	3.6
#29	2.1
#30	0.6
#31	0.4
#32	0.3
#33	0.2

*1 SEE FOOTNOTE P113463

*2 REF. FOOTNOTE P113457

RECORD SHEET 7: ACID NEUTRALIZATION CAPACITY

Sample ID No.: P113780 H3-54 B-7

Date of Test: June 2-4, 1989

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

SECTION 7.2.1

pH in Centrifuge Tube No. 1: 34. 9.2

pH in Centrifuge Tube No. 2: 35. 5.6

pH in Centrifuge Tube No. 3: 36. NSQ SUPERNATE (TOO REACTIVE) *1

Acid Addition Schedule Chosen: #3 MODIFIED *2

SECTION 7.2.2

Room Temperature (oC): 20^{o}C

Centrifuge Tube No. 3	pH
#34	8.1
#35	6.4
#36	6.1
#37	5.6
#38	5.3
#39	5.0
#40	5.0
#41	2.9
#42	0.7
#43	0.5
#44	0.3

*1 SEE FOOTNOTE P113463

*2 REF. FOOTNOTE P113457

RECORD SHEET 7: ACID NEUTRALIZATION CAPACITY

Sample ID.No.: P113782 H3-58 B-8

Date of Test: June 5-7, 1989

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

SECTION 7.2.1

pH in Centrifuge Tube No. 1: 37. 8.0

pH in Centrifuge Tube No. 2: 38. NSQ SUPERNATE (TOO REACTIVE) *1

pH in Centrifuge Tube No. 3: 39. NSQ SUPERNATE (TOO REACTIVE) *1

Acid Addition Schedule Chosen: #3 MODIFIED *2

SECTION 7.2.2

Room Temperature (oC): 20°C

Centrifuge Tube No. 4	pH
#1	6.4
#2	5.7
#3	5.3
#4	5.0
#5	4.8
#6	3.6
#7	1.0
#8	0.6
#9	0.5
#10	0.4
#11	0.4

*1 SEE FOOTNOTE P113463

*2 REF. FOOTNOTE P113457

RECORD SHEET 7: ACID NEUTRALIZATION CAPACITY

Sample ID No.: P113785 H3-62 B-9

Date of Test: June 5-7, 1989

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

SECTION 7.2.1

pH in Centrifuge Tube No. 1: 40. 6.7

pH in Centrifuge Tube No. 2: 41. 3.6

pH in Centrifuge Tube No. 3: 42. <1.0 (0.40)

Acid Addition Schedule Chosen: #3 MODIFIED *

SECTION 7.2.2

Room Temperature (oC): 20°C

Centrifuge Tube No.	pH
#12	6.8
#13	5.4
#14	3.5
#15	1.6
#16	0.7
#17	0.5
#18	0.4
#19	0.3
#20	0.3
#21	0.2
#22	0.2

* REF. FOOTNOTE P113457

RECORD SHEET 7: ACID NEUTRALIZATION CAPACITY

Sample ID.No.: P113684 H3-38 B-21

Date of Test: May 30 - June 1, 1989

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

SECTION 7.2.1

pH in Centrifuge Tube No. 1: 22. 10.1

pH in Centrifuge Tube No. 2: 23. 5.6

pH in Centrifuge Tube No. 3: 24. 5.6

Acid Addition Schedule Chosen: #3 MODIFIED *

SECTION 7.2.2

Room Temperature (oC): 20°C

Centrifuge Tube No. 2	pH
#34	9.5
#35	9.5
#36	9.5
#37	6.0
#38	5.8
#39	5.6
#40	5.6
#41	5.4
#42	5.2
#43	NSQ
#44	3.4

* REF. FOOTNOTE P113457

RECORD SHEET 7: ACID NEUTRALIZATION CAPACITY

Sample ID.No.: P113696 H3-48 B-22

Date of Test: June 2-4, 1989

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

SECTION 7.2.1

pH in Centrifuge Tube No. 1: 25. 9.3

pH in Centrifuge Tube No. 2: 26. 5.5

pH in Centrifuge Tube No. 3: 27. 5.5

Acid Addition Schedule Chosen: #3 MODIFIED *

SECTION 7.2.2

Room Temperature (oC): 20°C

Centrifuge Tube No. 3	pH
#1	8.4
#2	6.0
#3	5.6
#4	5.3
#5	5.1
#6	4.8
#7	4.7
#8	2.8
#9	0.9
#10	0.6
#11	0.4

* REF. FOOTNOTE P113457

RECORD SHEET 7: ACID NEUTRALIZATION CAPACITY

Sample ID No.: P113457 H3-3 C3

Date of Test: May 24-26, 1989

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

SECTION 7.2.1

pH in Centrifuge Tube No. 1: 10.1

pH in Centrifuge Tube No. 2: 8.5

pH in Centrifuge Tube No. 3: 5.5

Acid Addition Schedule Chosen: #3 MODIFIED *1

SECTION 7.2.2

Room Temperature (oC): 21°C

Centrifuge Tube No. ①	pH
#1	10.0
#2	9.6
#3	6.2
#4	5.7
#5	5.6
#6	5.5
#7	5.3
#8	5.3
#9	5.3
#10	5.2
#11	5.0

RECORD SHEET 7: ACID NEUTRALIZATION CAPACITY

Sample ID No.: P113463 H3-8 C-1

Date of Test: May 24-26, 1989

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

SECTION 7.2.1

pH in Centrifuge Tube No. 1: 4. 9.8

pH in Centrifuge Tube No. 2: 5. 6.4

pH in Centrifuge Tube No. 3: 6. NSQ SUPERNATE (TOO REACTIVE) *1

Acid Addition Schedule Chosen: #3 MODIFIED *2

SECTION 7.2.2

Room Temperature (oC): 21°C

Centrifuge Tube No. ①	pH
#12	9.3
#13	7.6
#14	5.9
#15	5.8
#16	5.4
#17	5.1
#18	4.9
#19	4.7
#20	3.3
#21	0.97
#22	0.70

*1 NSQ = NOT SUFFICIENT QUANTITY SUPERNATE REMAINING IN TUBE TO PH. SAMPLE TOO REACTIVE WITH THIS AMT. OF ACID, TO CONTAIN 26 IN TUBE, OVER 24 HR. EXTRACTION.

(241)

*2 REF. FOOTNOTE P113457

RECORD SHEET 7: ACID NEUTRALIZATION CAPACITY

Sample ID No.: P113710 H3-30 C-7

Date of Test: June 2-4, 1989

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

SECTION 7.2.1

pH in Centrifuge Tube No. 1: 28. 9.8

pH in Centrifuge Tube No. 2: 29. 5.7

pH in Centrifuge Tube No. 3: 30. 5.6

Acid Addition Schedule Chosen: #3 MODIFIED *

SECTION 7.2.2

Room Temperature (oC): 20°C

Centrifuge Tube No. 3	pH
#12	9.1
#13	8.3
#14	6.0
#15	5.7
#16	5.4
#17	5.2
#18	4.8
#19	4.7
#20	3.2
#21	1.1
#22	0.6

* REF. FOOTNOTE P113457

RECORD SHEET 7: ACID NEUTRALIZATION CAPACITY

Sample ID No.: P113534 H3-14 C-15

Date of Test: MAY 24-26, 1989

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

SECTION 7.2.1

pH in Centrifuge Tube No. 1: 7. 9.3

pH in Centrifuge Tube No. 2: 8. 5.6

pH in Centrifuge Tube No. 3: 9. 5.3

Acid Addition Schedule Chosen: #3 MODIFIED *

SECTION 7.2.2

Room Temperature (oC): 21°C

Centrifuge Tube No. ①	pH
#23	9.1
#24	6.8
#25	5.8
#26	5.5
#27	5.3
#28	5.0
#29	5.0
#30	4.5
#31	4.5
#32	4.0
#33	1.0

* REF. FOOTNOTE P113457

RECORD SHEET 7: ACID NEUTRALIZATION CAPACITY

Sample ID No.: P113534 H3-14 C-15 DUPLICATE

Date of Test: May 24-26, 1989

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

SECTION 7.2.1

pH in Centrifuge Tube No. 1: 10. 9.8

pH in Centrifuge Tube No. 2: 11. 5.6

pH in Centrifuge Tube No. 3: 12. 5.3

Acid Addition Schedule Chosen: #3 MODIFIED *

SECTION 7.2.2

Room Temperature (oC): 21°C

Centrifuge Tube No. ①	pH
#34	8.8
#35	6.1
#36	5.7
#37	5.5
#38	5.2
#39	5.0
#40	4.9
#41	4.8
#42	4.7
#43	1.4
#44	0.80

* REF. FOOTNOTE P113457

RECORD SHEET 7: ACID NEUTRALIZATION CAPACITY

Sample ID.No.: P113537 H3-17 C-16

Date of Test: May 30 - June 1, 1989

Laboratory: SOLID WASTE (RCRA) NSU PITTSBURGH

Technician: D. AHEARN

SECTION 7.2.1

pH in Centrifuge Tube No. 1: 13. 6.6

pH in Centrifuge Tube No. 2: 14. 5.4

pH in Centrifuge Tube No. 3: 15. 5.0

Acid Addition Schedule Chosen: #3 MODIFIED *

SECTION 7.2.2

Room Temperature (oC): 20°C

Centrifuge Tube No. ②	pH
#1	6.0
#2	5.8
#3	5.5
#4	5.4
#5	5.3
#6	5.1
#7	5.0
#8	4.7
#9	3.7
#10	0.8
#11	0.5

*REF. FOOTNOTE P113457

RECORD SHEET 7: ACID NEUTRALIZATION CAPACITY

Sample ID No.: P113540 H3-20 C-17

Date of Test: May 30 - June 1, 1989

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

SECTION 7.2.1

pH in Centrifuge Tube No. 1: 16. 6.0

pH in Centrifuge Tube No. 2: 17. 5.3

pH in Centrifuge Tube No. 3: 18. 4.5

Acid Addition Schedule Chosen: #3 MODIFIED *

SECTION 7.2.2

Room Temperature (oC): 20°C

Centrifuge Tube No. 2	pH
#12	6.1
#13	5.6
#14	5.3
#15	5.0
#16	4.9
#17	4.4
#18	2.5
#19	1.8
#20	0.9
#21	0.4
#22	0.3

* REF. FOOTNOTE P11457

RECORD SHEET 7: ACID NEUTRALIZATION CAPACITY

Sample ID No.: P113540 H3-20 C-17 DUPLICATE

Date of Test: May 30 - June 1, 1989

Laboratory: SOLID WASTE (RCRA) NUS PITTSBURGH

Technician: D. AHEARN

SECTION 7.2.1

pH in Centrifuge Tube No. 1: 19. 6.0

pH in Centrifuge Tube No. 2: 20. 5.7

pH in Centrifuge Tube No. 3: 21. 3.7

Acid Addition Schedule Chosen: #3 MODIFIED *

SECTION 7.2.2

Room Temperature (oC): 20°C

Centrifuge Tube No. 2	pH
#23	6.0
#24	5.7
#25	5.2
#26	4.9
#27	4.9
#28	4.5
#29	NSQ
#30	0.7
#31	0.5
#32	0.6
#33	0.4

* REF. FOOTNOTE P113457

June 12, 1989

Mr. Stephen Sawyer
Enviresponse, Inc.
GSA Raritan Depot
Woodbridge Avenue
Bay F
Edison, New Jersey 08837

SUBJECT: Laboratory Analysis Report, Chain-of-Custody, Quality Control Data Provided for GE Hialeah Site Samples Received April 4, 5, 6, 7, and 10, 1989

Dear Mr. Sawyer:

The laboratory analysis report, chain-of-custody record, and quality control data provided for GE Hialeah site samples received April 4, 5, 6, 7, and 10, 1989 are enclosed. The enclosed, table lists your identification number and corresponding NUS/LSG numbers.

GE Hialeah site comments are as follows:

PCB - Water

- The matrix spike and matrix spike duplicate samples (MS/MSD) analyzed on April 26, 1989. The relative percent difference (RPD) and the matrix spike recovery (MSR) were out of control, however, the surrogate recoveries were within acceptable limits, therefore, no corrective action was taken.

PCB - Soil

- Sample #P113731 was analyzed on April 20, 1989. One matrix spike duplicate recovery (MSD) was outside of quality control limits, however the relative percent difference (RPD) was within acceptable limits, therefore no corrective action was taken.

- Sample #P113710 was analyzed initially on May 16, 1989. The surrogate recoveries were outside of control limits, the sample was re-extracted and reanalyzed twice, and the surrogate recoveries still exceeded quality control limits, therefore a matrix interference is indicated.

Metals

- The matrix spike sample for copper analysis was outside of the Contract Laboratory Program required control limits of 75-125%. Since the laboratory control sample recovery was 96.7% and all calibration verifications for the analytical run were within acceptable limits, a matrix interference is indicated.

Please feel free to contact me should you have any questions or comments concerning this information.

Very truly yours,

Sharon L. Martinell

Sharon L. Martinell
Operations Assistant
Laboratory Services Group

SLM/ckh

Enclosures

ENVIRESPONSE - GE HIALEAH SITE

Client ID	NUS ID
H3-74 B-6	P113796
H3-74 B-6	P113797
H3-73 B-6	P113798
H3-55 B-7	P113799
H3-75 B-7	P113800
H3-76 B-7	P113801
H3-77 B-7	P113802
H3-77 B-7	P113803
H3-53 B-6	P113804
H3-57 B-7	P113805
H3-61 B-8	P113806
H3-68 B-6	P113807
H3-86	P113808
H3-78 B-7	P113809
H3-79 B-8	P113810
H3-79 B-8	P113811
H3-80 B-8	P113812
H3-80 B-8	P113813
H3-81 B-9	P113814
H3-82 B-9	P113815
H3-83 B-9	P113816
H3-84 B-9	P113817
H3-85	P113818
H3-87	P113958
H3-88	P113959
H3-89	P113960
H3-90	P113961
H3-91	P113962
H3-92	P113963
H3-93	P113964
H3-94	P113965
H3-95	P113966
H3-53 B-6	P114408
H3-57 B-7	P114409
H3-61 B-8	P114410
H3-68 B-6	P114411

ENVIRESPONSE - GE HIALEAH SITE

Page 1 of 2

Client ID	NUS ID
H3-2 C-3	P113456
H3-3 C-3	P113457
H3-4 C-3	P113458
H3-4 C-3	P113459
H3-5 C-3	P113460
H3-6 C-3	P113461
H3-7 C-1	P113462
H3-8 C-1	P113463
H3-9 C-1	P113464
H3-3 C-3	P113525
H3-8 C-1	P113526
H3-11 C-1	P113530
H3-11 C-1	P113531
H3-12 C-1	P113532
H3-13 C-1	P113533
H3-14 C-15	P113534
H3-14 C-15	P113535
H3-15 C-15	P113536
H3-17 C-16	P113537
H3-17 C-16	P113538
H3-18 C-16	P113539
H3-20 C-17	P113540
H3-20 C-17	P113541
H3-21 C-17	P113542
H3-37	P113683
H3-38 B-21	P113684
H3-38 B-21	P113685
H3-40 B-21	P113686
H3-42 B-21	P113687
H3-42 B-21	P113688
H3-43 B-21	P113689
H3-43 B-21	P113690
H3-44 B-22	P113691
H3-44 B-22	P113692
H3-23 C-15	P113698
H3-23 C-15	P113699
H3-24 C-15	P113700
H3-25 C-15	P113701

Client ID	NUS ID
H3-26 C-16	P113702
H3-26 C-16	P113703
H3-27 C-16	P113704
H3-27 C-16	P113705
H3-28 C-17	P113706
H3-28 C-17	P113707
H3-45 B-22	P113693
H3-46 B-22	P113694
H3-47 B-22	P113695
H3-48 B-22	P113696
H3-48 B-22	P113697
H3-29 C-17	P113708
H3-29 C-17	P113709
H3-30 C-7	P113710
H3-30 C-7	P113711
H3-31 C-7	P113712
H3-33 C-7	P113713
H3-34 C-7	P113714
H3-35 C-7	P113715
H3-36 C-7	P113716
	P113717
H3-50 B-6	P113777
H3-50 B-6	P113778
H3-51 B-6	P113779
H3-54 B-7	P113780
H3-54 B-7	P113781
H3-58 B-8	P113782
H3-58 B-8	P113783
H3-59 B-8	P113784
H3-62 B-9	P113785
H3-62 B-9	P113786
H3-63 B-9	P113787
H3-65 B-6	P113788
H3-65 B-6	P113789
H3-66 B-6	P113790
H3-69 B-6	P113791
H3-69 B-6	P113792
H3-70 B-6	P113793
H3-71 B-6	P113794
H3-72 B-6	P113795

U.S. EPA - CLP

2A - 2
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: NUS CORPORATION__________ Contract: __________

Lab Code: NUS___ Case No.: ENVIRESPONSE SDG No.: _____

Initial Calibration Source: SPEX STD__

Continuing Calibration Source: SPEX STD__

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminium									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium	100900.0	98500.00	97.6	100900.0	9680.00	95.9			A
Cobalt									
Copper									
Iron						No A			
Lead									
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc									
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN 7/87

U.S. EPA - CLP

3 - A
BLANKS

Lab Name: NUS CORPORATION__________ Contract: __________

Lab Code: NUS___ Case No.: ENVIRESPONSE SDG No.: _____

Preparation Blank Matrix (soil/water): SOIL_

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Preparation Blank	C	M
			1	C	2	C	3	C			
Aluminium											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium	10.0	U	10.0	U					1.0	U	A
Cobalt											
Copper	10.0	U	10.0	U					1.0	U	A
Iron											
Lead	40.0	U	40.0	U					4.0	U	A
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc	20.0	U	20.0	U					2.0	U	A
Cyanide											

U.S. EPA - CLP

3 - B
BLANKS

Lab Name: NUS CORPORATION____________ Contract: ____________

Lab Code: NUS___ Case No.: ENVIRESPONSE SDG No.: __ __

Preparation Blank Matrix (soil/water): SOIL_

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L)						Prepa-ration Blank	C	M
			1	C	2	C	3	C			
Aluminium											
Antimony											
Arsenic											
Barium											
Beryllium											
Cadmium											
Calcium											
Chromium	10.0	U	10.0	U					1.0	U	A
Cobalt											
Copper											
Iron											
Lead											
Magnesium											
Manganese											
Mercury											
Nickel											
Potassium											
Selenium											
Silver											
Sodium											
Thallium											
Vanadium											
Zinc											
Cyanide											

FORM III - IN 7/87

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

H3-50 B-6

Lab Name: NUS CORPORATION Contract:

Lab Code: NUS Case No.: ENVIRESPONSE SDG No.:

Matrix (soil/water): SOIL Level (low/med):

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminium									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium	75-125	111.00		86.900		24.3	99.2		A
Cobalt									
Copper	75-125	113.00		95.600		29.8	58.4		A
Iron									
Lead		353.00		290.00		59.7	105.5		A
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc	75-125	189.00		119.00		59.7	117.3		A
Cyanide									

Comments:

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

H3-50 B-6

Lab Name: NUS CORPORATION Contract:

Lab Code: NUS Case No.: **ENVIRESPONSE** SDG No.:

Matrix (soil/water): SOIL Level (low/med):

% Solids for Sample: 80.2 % Solids for Duplicate: 80.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminium								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium		86.900		83.400		4.1		A
Cobalt								
Copper		95.600		85.900		10.7		A
Iron								
Lead		290.00		251.00		14.4		A
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc		119.00		117.00		1.7		A
Cyanide								

U.S. EPA - CLP

2A - 1

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: NUS CORPORATION Contract:

Lab Code: NUS Case No.: ENVIRESPONSE SDG No.:

Initial Calibration Source: SPEX STD

Continuing Calibration Source: SPEX STD

Concentration Units: ug/L

	Initial Calibration			Continuing Calibration					
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	M
Aluminium									
Antimony									
Arsenic									
Barium									
Beryllium									
Cadmium									
Calcium									
Chromium	100900.0	97400.00	96.5	100900.0	95700.00	94.8			A
Cobalt									
Copper	100000.0	110000.0	110.0	100000.0	110000.0	110.0			A
Iron									
Lead	100200.0	94000.00	93.8	100200.0	100000.0	99.8			A
Magnesium									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Vanadium									
Zinc	100100.0	105200.0	105.1	100100.0	105800.0	105.7			A
Cyanide									

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

SURROGATE RECOVERY SUMMARY - GC

FRACTION/MATRIX: PCBS/WATER

SAMPLE NUMBER	BOOK & PAGE No.	DATE OF ANALYSIS	CL-9 80-132					
BLK 4-10-89	114-89 pg. 5	4/14/89	95					
P113462	↓	↓	106					
P113713	↓	↓	117					

Comments: ______________________________

2/89

9/86

SURROGATE RECOVERY SUMMARY - GC

FRACTION/MATRIX: PCBS/WATER

SAMPLE NUMBER	BOOK & PAGE No.	DATE OF ANALYSIS	CL-9 80- 132					
BLANK 4/23/89	049-89 p.44	4/24/89	87					
P113683	049-89 p.44	4/24/89	83					
P113809	049-89 p.44	4/24/89	100					

Comments:

2/89

9/86

SURROGATE RECOVERY SUMMARY - GC

FRACTION/MATRIX: PCBS/WATER

SAMPLE NUMBER	BOOK & PAGE No.	DATE OF ANALYSIS	CL-9 80-132					
BLANK 4/25/89	049-89 p. 44	4/25/89	91					
P113961	↓	↓	106					
P113962	↓	↓	91					
P113963	↓	↓	93					
P113964	↓	↓	93					
P113965	↓	↓	87					
P113966	047-89 p. 48	4/26/89	96					
P113966MS	↓	↓	98					
P113966MSD	↓	↓	88					

Comments:

2/89

9/86

SURROGATE RECOVERY SUMMARY - GC

FRACTION/MATRIX: PCBS/WATER

SAMPLE NUMBER	BOOK & PAGE No.	DATE OF ANALYSIS	CL-9 80- 132					
BLANK 5-2589	139-89-26	5-25-89	93					
116907	↓	↓	118					
116905	↓	↓	113					
116902	↓	↓	122					
116901	↓	↓	125					
116903	↓	↓	116					
116904	↓	↓	122					
116909	↓	↓	119					
116910	↓	↓	112					
P116911(H3-29	138-89-29	5/30/89	119					
P116914(H3-29C	↓	↓	110					
P116908(H3-36)	↓	↓	106					
P116913(H3-45)	138-89-25	↓	106					
P116912(H3-77C)	↓	↓	110					

Comments: ______

2/89

9/86

SURROGATE RECOVERY SUMMARY - GC

FRACTION/MATRIX: PCBS/WATER

SAMPLE NUMBER	BOOK & PAGE No.	DATE OF ANALYSIS	CL-9 80-132					
P113818	047-89 p.48	4/26/89	88					
P113818MS			91					
P113818MSD	↓		83					
BLANK 4/27/89	047-89 p. 50	5/1/89	96					
P113711			88					
P13711MS			92					
P113711MSD			100					
P113525			98					
P113526			112					
P113535			101					
P113538	↓	↓	124					

Comments: ___

2/89

9/86

SURROGATE RECOVERY SUMMARY - GC

FRACTION/MATRIX: PCBS/WATER

SAMPLE NUMBER	BOOK & PAGE No.	DATE OF ANALYSIS	CL-9 80-132					
P113541	047-89 p. 52	5/2/89	104					
P113685	↓	↓	106					
P113697	↓	↓	98					
BLANK 5/4/89	139-89 p. 3	5/5/89	88					
P113778	↓	↓	97					
P113781	↓	↓	90					
P113783	↓	↓	103					
P113786	↓	↓	100					
P113789	↓	↓	102					

Comments: ______

2/89

9/86

GC
METHOD BLANK SUMMARY

FRACTION: PCB

MATRIX: WATER

DATE EXTRACTED: 4/25/89

BY: PS/JW

DATE ANALYZED: 4/25/89

BY: RAF

INSTRUMENT: GC #3

RUN NO: 17

047-89-44

COMPOUNDS FOUND	CONC.	DETECTION LIMIT
NONE		

Comments:

9/86

MATRIX SPIKE/MATRIX SPIKE DUPLICATE SUMMARY - GC

FRACTION: PCB (ONLY) MATRIX: WATER
SAMPLE NUMBER: P113966 [illegible]
BOOK AND PAGE NUMBER: 047-89 p. 48
MS RUN NUMBER: 10

DATE EXTRACTED: 4/25/89 BY: PS/JW
DATE ANALYZED: 4/26/89 BY: RAF
INSTRUMENT: GC #3
MSD RUN NUMBER: 11

MATRIX SPIKE COMPOUNDS	ORIG RESULT (UG/L)	MS AND MSD ALIQ. (L)			MS RESULT (UG/L)	MS MSR %	MSD RESULT (UG/L)	MSD MSR %	RPD	CONTROL LIMITS RPD	CONTROL LIMITS MSR
		ALIQ. (L)	SA (ug)	THEO (UG/L)							
AROCLOR 1016	<0.5	0.1	0.25	2.5	2.38	95	1.67	67	*35	14	52-125
AROCLOR 1260	4.72	0.1	0.50	9.72	8.93	92	4.46	*46	*67	8	66-125

$$RPD = \left| \frac{\text{MS result} - \text{MSD result}}{\frac{1}{2}(\text{MS result} + \text{MSD result})} \right| \times 100\%$$

$$Theo = \frac{(\text{orig result} \times \text{aliq.}) + SA}{\text{Aliq.}}$$

$$MSR = \frac{\text{MS or MSD result}}{\text{Theo}} \times 100\%$$

Orig = Original
Aliq = Sample aliquot
SA = Spike added
Theo = Theoretical result
MSR = Matrix spike recovery
RPD = Relative percent difference

COMMENTS: * RPD & MSR% OUT OF CONTROL, HOWEVER SURROGATE RECOVERY WAS ACCEPTABLE, THEREFORE, NO CORRECTIVE ACTION TAKEN.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE SUMMARY - GC/MS

FRACTION: PCB (ONLY) MATRIX: WATER

SAMPLE NUMBER: P113711 c-7

BOOK AND PAGE NUMBER: 047-89 pg. 50

MS RUN NUMBER: 7

DATE EXTRACTED: 4/27/89 BY: PS/JW

DATE ANALYZED: 5/1/89 BY: J.S.

INSTRUMENT: GC #3

MSD RUN NUMBER: 8

MATRIX SPIKE COMPOUNDS	ORIG RESULT (ug/L)	MS AND MSD ALIQ. (L)	SA (ug)	THEO (ug/L)	MS RESULT (ug/L)	MSR %	MSD RESULT (ug/L)	MSR %	RPD	CONTROL LIMITS RPD	MSR
AROCLOR 1016	<0.5	0.1	0.25	2.5	2.7	108	2.9	116	7.1	14	52-125
AROCLOR 1260	<1.0	↓	0.50	5.0	4.4	88	4.6	92	4.4	8	56-125

$$\text{RPD} = \left|\frac{\text{MS result} - \text{MSD result}}{1/2(\text{MS result} + \text{MSD result})}\right| \times 100\%$$

$$\text{Theo} = \frac{(\text{orig result} \times \text{aliq}) + \text{SA}}{\text{Aliq.}}$$

$$\text{MSR} = \frac{\text{MS or MSD result}}{\text{Theo}} \times 100\%$$

Orig = Original
Aliq = Sample aliquot
SA = Spike added
Theo = Theoretical result
MSR = Matrix spike recovery
RPD = Relative percent difference

COMMENTS:

MATRIX SPIKE/MATRIX SPIKE DUPLICATE SUMMARY - GC/MS

FRACTION: PCB (ONLY) **MATRIX:** WATER
SAMPLE NUMBER: P113818 Field rinsate
BOOK AND PAGE NUMBER: 047-89 p. 45
MS RUN NUMBER: 8

DATE EXTRACTED: 4/23/89 **BY:** PS/JW
DATE ANALYZED: 4/26/89 **BY:** RAF
INSTRUMENT: GC #3
MSD RUN NUMBER: 9

MATRIX SPIKE COMPOUNDS	ORIG RESULT (ug/L)	MS AND MSD ALIQ. (L)	MS AND MSD SA (ug)	MS AND MSD THEO (ug/L)	MS RESULT (ug/L)	MS MSR %	MSD RESULT (ug/L)	MSD MSR %	RPD	CONTROL LIMITS RPD	CONTROL LIMITS MSR
AROCLOR 1016	<0.5	0.1	0.25	2.5	2.46	98	2.42	97	1.6	14	52-125
AROCLOR 1260	<1.0	0.1	0.5	5.0	4.52	90	4.22	84	6.9	8	56-125

$$RPD = \left| \frac{\text{MS result} - \text{MSD result}}{1/2(\text{MS result} + \text{MSD result})} \right| \times 100\%$$

$$\text{Theo} = \frac{(\text{orig result} \times \text{aliq}) + \text{SA}}{\text{Aliq.}}$$

$$MSR = \frac{\text{MS or MSD result}}{\text{Theo}} \times 100\%$$

Orig - Original
Aliq - Sample aliquot
SA - Spike added
Theo - Theoretical result
MSR - Matrix spike recovery
RPD - Relative percent difference

COMMENTS:

GC
METHOD BLANK SUMMARY

FRACTION: PCB 's **MATRIX:** WATERS

DATE EXTRACTED: 5/4/89 **BY:** P.S./J.W.

DATE ANALYZED: 5/5/89 **BY:** J.S.

INSTRUMENT: GC #3 RUN NO.: S-139-89-3

COMPOUNDS FOUND	CONC.	DETECTION LIMIT
NONE	-	<1.0 ug/l

Comments: Sulfuric Acid cleanup

9/86

GC
METHOD BLANK SUMMARY

FRACTION: PCB's **MATRIX:** WATERS

DATE EXTRACTED: 4/27/89 **BY:** P.S./J.W.

DATE ANALYZED: 5/1/89 **BY:** J.S.

INSTRUMENT: GC #3 **RUN NO:** 5-047-89-50

COMPOUNDS FOUND	CONC.	DETECTION LIMIT
NONE	–	<1.0 ug/

Comments: Acid cleaned

9/86

GC
METHOD BLANK SUMMARY

FRACTION: PCB **MATRIX:** WATER

DATE EXTRACTED: 4/23/89 **BY:** PS/JW

DATE ANALYZED: 4/24/89 **BY:** RAF

INSTRUMENT: GC #3 **RUN NO:** 5

COMPOUNDS FOUND	CONC.	DETECTION LIMIT
NONE	-	-

Comments:

9/86

GC
METHOD BLANK SUMMARY

FRACTION: PCB's
MATRIX: WATER
DATE EXTRACTED: 5/25/89
BY: P. Saracena; J. Waugaman; R. Bonidie
DATE ANALYZED: 5/25/89
BY: M. Laughlin / RAF
INSTRUMENT: GC #3
RUN NO: 5

COMPOUNDS FOUND	CONC.	DETECTION LIMIT
NONE		<0.5 ug/L

Comments:

9/86

GC
METHOD BLANK SUMMARY

FRACTION: PCB 's
MATRIX: WATER
DATE EXTRACTED: 4/10/89
BY: P.S.
DATE ANALYZED: 4/14/89
BY: J.S.
INSTRUMENT: GC #8
RUN NO: 5-114-89-5

COMPOUNDS FOUND	CONC.	DETECTION LIMIT
NONE	–	1.0 ug/L

Comments: Acid cleaned

9/86

SURROGATE RECOVERY SUMMARY- GC

FRACTION/MATRIX:PCB's ONLY/SOIL

SAMPLE NUMBER	DATE OF ANALYSIS	BOOK & PAGE NO.	CL-9 81 - 113						
P113782	4/17/89	047-89, 36	* D.L.						
P113788	↓	↓	* D.L.						
P113785			102						
Blank 4/14/89	4/16/89	036-89, 47	87						

Comments: *D.L. - Dilution of sample prevents surrogate quantitation.

LAM
4/12/89

SURROGATE RECOVERY SUMMARY- GC

FRACTION/MATRIX: PCB's ONLY/SOIL

SAMPLE NUMBER	DATE OF ANALYSIS	BOOK & PAGE NO.	CL-9 81 - 113					
P113710	4/17/89	36-89, 48	D.L. *					
P113463	↓	↓	D.L. *					
P113537			D.L.**					

Comments: *D.L. - Dilution of sample prevents Surrogate Quantitation.

**Dilution and matrix interference prevented proper quantitation of CL-9 surrogate.

LAM
4/12/89

SURROGATE RECOVERY SUMMARY- GC

FRACTION/MATRIX: PCB's ONLY/SOIL

SAMPLE NUMBER	DATE OF ANALYSIS	BOOK & PAGE NO.	CL-9 81 - 113					
P113780	4/18/89	047-89, 38	* D.L.					
P113777	↓	↓	* D. L.					
P113534			* D.L.					

Comments: D.L. - Diluation to sample prevents surrogate quantitation.

LAM
4/12/89

SURROGATE RECOVERY SUMMARY- GC

FRACTION/MATRIX: PCB's ONLY/SOIL

SAMPLE NUMBER	DATE OF ANALYSIS	BOOK & PAGE NO.	CL-9 81 - 113					
P113731	4/20/89	114-89, 10	81					
P113731 MS	↓	↓	96					
P113731 MSD	↓	↓	115*					

Comments: *Outside of quality control limits, however MSR and RPD are within acceptance limits, therefore no corrective action taken.

LAM
4/22/89

SURROGATE RECOVERY SUMMARY- GC

FRACTION/MATRIX: PCB's ONLY/SOIL

SAMPLE NUMBER	DATE OF ANALYSIS	BOOK & PAGE NO.	CL-9 81 - 113					
Blank 5-12-89	5/15/89	139-89, 11	103					
P113457	↓	↓	98					
P113696			109					
P113463			100					
P113534			81					
P113777			108					
P113780			109					
P113788			105					
P113782			96					
P113684			104					

Comments: ____________________

LAM
4/12/89

SURROGATE RECOVERY SUMMARY- GC

FRACTION/MATRIX: PCB's ONLY/SOIL

SAMPLE NUMBER	DATE OF ANALYSIS	BOOK & PAGE NO.	CL-9 81 - 113					
Blank	5/16/89	107-89 p. 11	93					
P113540	↓	↓	85					
P113537	↓	↓	105					
P113710	↓	↓	120*					
Blank 5/19/89	5/24/89	078-89	97					
Blank 5/19/89	↓	↓	99					
P113710 RE	↓	↓	149**					
P113710 RE	↓	↓	123**					

Comments: *Surrogate recovery out of quality control limits; sample re-extracted.

** Re-extracted and re-analyzed twice; surrogate recovery still exceeded quality control limits, therefore a matrix interference is indicated.

LAM
6/2/89

MATRIX SPIKE/MATRIX SPIKE DUPLICATE SUMMARY - GC/MS

FRACTION: PCB (ONLY) MATRIX: SOIL DATE EXTRACTED: 4/14/89 BY: P.S./J.W.

SAMPLE NUMBER: P113731 DATE ANALYZED: 20 Apr 89 BY: ARK

BOOK AND PAGE NUMBER: 114-89, 10 INSTRUMENT: #8

MS RUN NUMBER: 8 MSD RUN NUMBER: 9

MATRIX SPIKE COMPOUNDS	ORIG RESULT (MG/KG)	MS AND MSD			MS		MSD		RPD	CONTROL LIMITS	
		ALIQ. (G)	SA (ug)	THEO MG/KG	RESULT (MG/KG)	MSR %	RESULT (MG/KG)	MSR %		RPD	MSR
AROCLOR 1016	<1.0	30g	2.5	0.08	0.06	75	0.07	88	15.4	18	45-138
AROCLOR 1260	↓	↓	5.0	0.17	0.14	82	0.14	82	0	24	55-147

$$\text{RPD} = \left| \frac{\text{MS result} - \text{MSD result}}{1/2(\text{MS result} + \text{MSD result})} \right| \times 100\%$$

$$\text{Theo} = \frac{(\text{orig result} \times \text{aliq}) + \text{SA}}{\text{Aliq.}}$$

$$\text{MSR} = \frac{\text{MS or MSD result}}{\text{Theo}} \times 100\%$$

Orig = Original
Aliq = Sample aliquot
SA = Spike added
Theo = Theoretical result
MSR = Matrix spike recovery
RPD = Relative percent difference

COMMENTS:

GC/MS
METHOD BLANK SUMMARY

FRACTION: PCB **MATRIX:** SOIL

DATE EXTRACTED: 5/19/89 **BY:** Paul Connolly

DATE ANALYZED: 5/24/89 **BY:** ARK

INSTRUMENT: #5 RUN NO.: #5

COMPOUNDS FOUND	CONC.	DETECTION LIMIT
NONE	–	–

Comments: 078-89. 50 , Enviresponse

GC/MS
METHOD BLANK SUMMARY

FRACTION: PCB **MATRIX:** SOIL

DATE EXTRACTED: 5-16-89 **BY:** JW/PS

DATE ANALYZED: 5-16-89 **BY:** RAF

INSTRUMENT: GC #1 5

COMPOUNDS FOUND	CONC.	DETECTION LIMIT
NONE	-	0.2ug/g

Comments:

GC/MS
METHOD BLANK SUMMARY

FRACTION: PCB **MATRIX:** SOIL

DATE EXTRACTED: 5-19-39 **BY:** P.C.

DATE ANALYZED: 5-24-89 **BY:** RK

INSTRUMENT: #5 #6

COMPOUNDS FOUND	CONC.	DETECTION LIMIT
NONE	-	-

Comments: 078-89, 50

GC
METHOD BLANK SUMMARY

FRACTION:	PCB	**MATRIX:**	SOIL
DATE EXTRACTED:	4/14/89	**BY:**	P.S./J.W.
DATE ANALYZED:	4/16/89	**BY:**	ARK
INSTRUMENT:	#1	**RUN NO:**	5

COMPOUNDS FOUND	CONC.	DETECTION LIMIT
None		

Comments: 036-39, 47

9/86

GC
METHOD BLANK SUMMARY

FRACTION: PCB **MATRIX:** SOIL

DATE EXTRACTED: 5-12-89 **BY:** J.W./P.S./R.B.

DATE ANALYZED: 5-15-89 **BY:** ARK

INSTRUMENT: #3 RUN NO.: 5

COMPOUNDS FOUND	CONC.	DETECTION LIMIT
NONE	-	-

Comments:

SURROGATE RECOVERY SUMMARY - GC/MS

FRACTION/MATRIX: VOA/SOIL

SAMPLE NUMBER	FILE NUMBER	BOOK & PAGE NO.	DCE-d4 70-121	BFR 74-121	TOL-d8 81-117			
MLS Method Blank	VB204188902	299-88-47	104	104	104			
P113807	V204188905	↓	98	100	97			
P113806MS	V2041889065		96	100	96			
P113806MD	V204188907D	↓	107	101	101			
Method Blank	VB204248902	299-88-50	107	106	102			
P113959	V204248901	↓	98	94	90			

Comments;

5/88

MATRIX SPIKE/MATRIX SPIKE DUPLICATE SUMMARY - GC/MS

FRACTION: VOA MATRIX: SOIL

SAMPLE NUMBER: P113806

BOOK AND PAGE NUMBER: 299-88-47

MS FILE NUMBER: V2041889065

DATE EXTRACTED: NA BY: NA

DATE ANALYZED: 4/19/89 BY: JMA

INSTRUMENT: 32B

MSD FILE NUMBER: V204188907D

MATRIX SPIKE COMPOUNDS	ORIG RESULT (MG/KG)	MS AND MSD ALIQ. (G)	SA (UG)	THEO (MG/KG)	MS RESULT (MG/KG)	MS MSR %	MSD RESULT (MG/KG)	MSD MSR %	RPD	CONTROL LIMITS RPD	CONTROL LIMITS MSR
1,1-DICHLOROETHENE	0	.005	0.25	50	37	74	39	78	5	22	59-172
TRICHLOROETHENE	0	↓	↓	↓	39	78	44	88	11	24	62-137
CHLOROBENZENE	6				45	90	48	96	6	21	60-133
TOLUENE	0				42	84	43	86	2	21	59-139
BENZENE	0				42	84	47	94	11	21	66-142

$$RPD = \left| \frac{\text{MS result} - \text{MSD result}}{\tfrac{1}{2}(\text{MS result} + \text{MSD result})} \right| \times 100\%$$

$$Theo = \frac{(\text{orig result} \times \text{aliq.}) + SA}{\text{Aliq.}}$$

$$MSR = \frac{\text{MS or MSD result}}{\text{Theo}} \times 100\%$$

Orig = Original
Aliq = Sample aliquot
SA = Spike added
Theo = Theoretical result
MSR = Matrix spike recovery
RPD = Relative percent difference

COMMENTS:

5/88

GC/MS
METHOD BLANK SUMMARY

FRACTION: VOA **MATRIX:** MLS

DATE EXTRACTED: -- **BY:** ---

DATE ANALYZED: 4/18/89 **BY:** RLM/ARR

INSTRUMENT: 32B FILE NO.: VB204188902

COMPOUNDS FOUND	ug/Kg CONC.	DETECTION LIMIT
$MeCl_2$	870	625 ug/Kg
Toluene	100	↓
Acetone	970	625 ug/Kg

Comments:

GC/MS
METHOD BLANK SUMMARY

FRACTION: VOA

MATRIX: LLS

DATE EXTRACTED:

BY:

DATE ANALYZED: 4-24-89

BY: RLM

INSTRUMENT: 32B

File No.: VB204248902

COMPOUNDS FOUND	ug/Kg CONC.	DETECTION LIMIT
MeCl2	375	625ug/Kg
Acetone	3750	1250ug/Kg

Comments:

SURROGATE RECOVERY SUMMARY - GC/MS

FRACTION/MATRIX: VOA/WATER

SAMPLE NUMBER	FILE NUMBER	BOOK & PAGE NO.	DCE-d4 76-114	BFB 86-115	TOL-d8 88-110			
LLW Method Blank	VB204138901	299-88-44	101	91	98			
P113808	V204138901	↓	97	90	91			
NUS0424W	VB204248904	299-88-50	100	97	99			
P114408	V204248903		102	97	100			
P114409	V204248904		104	99	95			
P114410	V204248906		103	105	96			
P114411	V204248908	↓	104	101	97			
P113396	V204128910	299-88-43	106	98	91			
P113396 MS	V2041289085		109	103	99			
P113396 MSD	V204128909D	↓	106	102	97			
Method Blank	VB204138901 *	299-88-44	101	91	98			
P113960	V204138902 *	↓	104	89	92			

Comments; * Started analysis run on 4/12/89 past 2400 hours; continuation of analysis on 4/13/89.

5/88

MATRIX SPIKE/MATRIX SPIKE DUPLICATE SUMMARY - GC/MS

FRACTION: VOA **MATRIX:** WATER

SAMPLE NUMBER: P113396

BOOK AND PAGE NUMBER: 299-88-43

MS RUN NUMBER: V2041289085

DATE EXTRACTED: NA **BY:** NA

DATE ANALYZED: 4/12/89 **BY:** JNA

INSTRUMENT: 32B

MSD RUN NUMBER: V204128909D

MATRIX SPIKE COMPOUNDS	ORIG RESULT (ug/L)	MS AND MSD ALIQ. (L)	SA (ug)	THEO (ug/L)	MS RESULT (ug/L)	MSR %	MSD RESULT (ug/L)	MSR %	RPD	CONTROL LIMITS RPD	MSR %
1,1-DICHLOROETHENE	0	.005	0.25	50	50	100	52	104	4	5	70-135
TRICHLOROETHENE	↓	↓	↓	↓	61	122*	60	120*	2	6	78-119
CHLOROBENZENE	↓	↓	↓	↓	45	90	47	94	4	6	75-119
TOLUENE	↓	↓	↓	↓	43	86	47	94	9*	6	72-124
BENZENE	↓	↓	↓	↓	50	100	54	106	8*	7	70-124

$$\text{RPD} = \left|\frac{\text{MS result} - \text{MSD result}}{\tfrac{1}{2}(\text{MS result} + \text{MSD result})}\right| \times 100\%$$

$$\text{Theo} = \frac{(\text{orig result} \times \text{aliq.}) + \text{SA}}{\text{Aliq.}}$$

$$\text{MSR} = \frac{\text{MS or MSD result}}{\text{Theo}} \times 100\%$$

Orig = Original
Aliq = Sample aliquot
SA = Spike added
Theo = Theoretical result
MSR = Matrix spike recovery
RPD = Relative percent difference

COMMENTS: *Out of Quality Control limits, however surrogate recoveries are within acceptance limits, therefore no corrective action taken.

GC/MS
METHOD BLANK SUMMARY

FRACTION: VOA
MATRIX: Water
DATE EXTRACTED:
BY:
DATE ANALYZED: 4/12/89
BY: TLS
INSTRUMENT: 32B
File No: VB204128902

COMPOUNDS FOUND	CONC.	DETECTION LIMIT
MeCl2	2	
Acetone	10	

Comments:

GC/MS
METHOD BLANK SUMMARY

FRACTION: VOA

MATRIX: LLW

DATE EXTRACTED: --

BY: --

DATE ANALYZED: 4/13/89

BY: RLM

INSTRUMENT: 32B

FILE NO.: VB204138901

COMPOUNDS FOUND	ug/L CONC.	DETECTION LIMIT
MeCl$_2$	2	5 ug/L
Acetone	14	10 ug/L

Comments:

GC/MS
METHOD BLANK SUMMARY

FRACTION: VOA

MATRIX: LLW

DATE EXTRACTED: --

BY: --

DATE ANALYZED: 4/24/89

BY: ARR

INSTRUMENT: 32B

FILE NO.: VB204248904

COMPOUNDS FOUND	CONC.	DETECTION LIMIT
Methylene Chloride	2 ug/L	5 ug/L
Acetone	6 ug/L	10 ug/L

Comments:

Test Name PH
Test Code $150
Instrument ORION 501

MISCELLANEOUS QC DATA - SOLID SAMPLES

			ORIGINAL		DUPLICATE			TRIPLICATE				DAILY STANDARD	
Sample No. Recheck No.	Date Anal. Initials	Dilution	AL (g) FV (mL)	OR (UNITS)	AL (g) FV (mL)	DR (UNITS)	(%) RPD	AL (g) PV (mL)	SA (mL) SC (mg/L)	TAR (UNITS) TTR (UNITS)	MSR%	DSAR (mg/L) DSTR (mg/L)	DSR%
P113782	5-15-89		20g	11.9	20g	11.9	0.0	N/A	—	—	—	4.02	100.5
0	GPW		20ml		20ml			—	—	—		4.00	
P113788	5-15-89		20g	12.2	20g	12.2	0.0	N/A	—	—	—	↓	↓
0	GPW		20ml		20ml			—	—	—			
P114609	5-15-89		20g	11.4	20g	11.4	0.0	N/A	—	—	—		
0	RAW		20ml		20ml			—	—	—			

AL - Aliquot
DR - Duplicate Result
DSAR - Daily Standard Actual Result
DSR% - Daily Standard Percent Recovery
$- \frac{DSAR}{DSTR} \times 100$
DSTR - Daily Standard Theoretical Result

FV - Final Volume
MSR% - Matrix Spike Percent Recovery
$- \frac{TAR}{TTR} \times 100$
OR - Original Result
RPD - Relative Percent Difference
$- \frac{OR-DR}{(OR+DR)1/2} \times 100$

SA - Spike Added
SC - Concentration of Spike Added
TAR - Triplicate Actual Result
TTR - Triplicate Theoretical Result
$- \frac{(OR)(TRIPLICATE\ AL) + (SA)(SC)}{(TRIPLICATE\ AL)}$

APPENDIX C

MICROSTRUCTURAL REPORT OF CONSTRUCTION TECHNOLOGY LABORATORIES, INC.

Microstructual Evaluation of Solidified Soil at Age of 1-Year from the SITE Demonstration of IWT/GEO-CON Technology at Hialeah, Florida.

PART I. Laboratory Report

PART II. Technical Services Report

prepared for

Foster-Wheeler Enviresponse, Inc.

by

Construction Technology Laboratories

LABORATORY REPORT
PART I

CLIENT: Foster Wheeler Enviresponse

DATE: 08/25/89
PROJECT #: 400815

SUBJECT: Evaluation of IWT/GEO-CON SITE Cores

A. Background and Objectives

Six samples were received from Steve Sawyer of Enviresponse representing two areas at the IWT/Geo-Con SITE program demonstration in Hialeah Florida. Solidification in-situ occured in April 1988 and these samples were obtained in April 1989.

The samples were submitted to the petrography laboratory and thin sections were prepared and analyzed. The experimental details, descriptions of samples, and petrographers conclusions are all included in the Technical Services Report in Part II.

The samples were described by the client as follows:

Designation	Location	Depth below grade (feet)	Other Information
B-6	H3-52	1-2	Above watertable, high in volatile organics (VOC), some heavy metals.
B-7	H3-56	7-8	Below watertable, high in VOC's, some heavy metals.
B-8	H3-60	11-12	Below watertable, high in VOC's, some heavy metals.
B-21	H3-39	1-2	No VOC's or heavy metals.
C-7	H3-32	7-8	No VOC's or heavy metals.
C-16	H3-19	7-8	No VOC's or heavy metals.

B. Experimental Methods

X-ray diffractometry

Approximately 10g from each sample core was ground to a powder with particle sizes 80 microns or less. Diffractometry patterns were obtained from 6 to 60 degree two-theta on a Phillips vertical goniometer using Cu K alpha radiation with tube settings of 40 Kv and 35 ma. Data were collected with a Dapple software interface in steps of 0.05^{0} and collection time of 5 sec. per step. These samples were ground at conditions that destroyed the crystallinity of the ettringite. Small samples were scraped from freshly broken surfaces and hand ground and scanned from 7.5 to 21.5 degrees two-theta with other conditions identical to detect the presence of ettringite.

Scanning Electron Microscopy

Small samples approximately 0.5" thick and 1" by 0.75" were freshly cut then dried, mounted and gold coated. The uniformity of the samples as evaluated by petrography and X-ray diffractometry indicated that information from energy dispersive X-ray analysis would not be of great value. A few spot checks confirmed this conclusion. Photographs of significant features were taken at magnifications from 300 to 6000. The legend at the bottom of each plate includes the following information as read from left to right; beam energy in kev., magnification factor divided by 1000 (i.e. 1.5 kx = 1500 magnification), a scale bar and the number of microns the bar represented and a plate identification number. Photographs were taken primarily in paste rich areas in pores and cracks; aggregate particles and fractured surfaces were generally avoided.

C. Experimental Results

X-ray diffractometry indicated that all samples had quite similar consistency, primarily quartz and calcite with minor amounts of aragonite, portlandite and ettringite. A few samples also contained gypsum and plaster. A summary of the X-ray diffraction analysis appears in Table 1. A greater amount of calcite was present in samples B21 and C16 than in the other four samples. Ettringite appeared to be most abundant in samples B-6 and C-7 but was distributed unevenly. The two patterns for sample C-16 indicate this. Only a trace of ettringite appears in the hand ground sample but a significant amount is present in the full scan sample. The mechanical grinding was not as complete for this sample as for the other five, so the ettringite crystallinity was not disrupted. The X-ray diffraction (XRD) patterns appear in Figures 1a and 1b through 6a and 6b.

Sample B-6 (H3-52)

Many fine fractured (clastic) particles are evident embedded in a porous amorphous binder showing some evidence of microcracking as shown in Plate 1a. At higher magnification, the binder and particles are covered with numerous ettringite needles (Plate 1b) which forms a porous binder between particles. Some regions of platey morphology typical of hydration product is evident in other regions (Plate 1c). Adjacent to that area and at 6000 magnification nests of possible ettringite needles are evident intermixed with morphologically poorly defined gel, most likely C-S-H gel. Plate 1e shows aggregate particles at the top, top right, and lower center. Somewhat layered morphologically poorly defined hydration product is in the center and surrounding the aggregate particles.

Sample B-7 (H3-56)

This sample has a good homogeneous mixture of binder and aggregate particles and appears somewhat less porous than the other samples. Embedded in the paste of plate 2a is a glassy particle which is shown at higher magnification in Plate 2b. The multiple curved fractures of this particle is typical of the morphology of glassy material and this is most probably quenched blast furnace slag which has a high glass content. Some areas of this sample indicate the extremely fine sub-micron particles that are contained in the aggregate and are bound into the matrix (Plate 2c), but other areas (Plate 2d) contain comparatively larger particles and coarse crystalline hydrate particles with morphology similar to disordered calcium hydroxide. In this sample, ettringite needles were very scarce.

Sample B-8 (H3-60)

In Plate 3a, the binder is considerably less dense than B-7 and an embedded laminar crystal is evident. The morphology of this crystal is commonly associated with mellilite, a crystalline material found in blast furnace slag. At higher magnification (Plate 3b), a porous honeycomb C-S-H hydrate frequently found in hydrated slag cements covers the crystal, aggregate and binder. Plate 3c has in the lower half porous hydrated material typical of pore growth and in the upper half a fractured surface with dense somewhat layered product. On aggregate particles a fine porous film of binder consisting of both calcium silicate hydrates and ettringite are abundant in this sample and examples are shown in plate 3d and 3e.

Sample B-21 (H3-39)

This sample has a good distribution of binder throughout clastic particles which are 1 to 15 microns (Plate 4a). Some evidence of layered hydrate structure is evident along with some microcracks. In Plates 4b and 4c at higher magnification needles, probably of ettringite, are abundant in pores and both between and covering layered particles. The larger particles in Plate 4d may be hydration product of poorly formed morphology. In some regions the nests of ettringite needles are reasonably dense (Plate 4d). In spite of abundant ettringite, there are pores and cracks that do not have extensive ettringite needles.

Sample C-7 (H3-32)

Material in this area is similar to that of the 4 samples from area B and the extensive coverage by ettringite-like needle crystals is apparent in Plate 5a and similar to several plates from area B. Platey crystals of approximately 1 micron thickness are shown bound into the matrix in Plate 5b. Plates 5c and 5d show the same area at different magnification. Some ettringite and matrix binder is shown covering a very large particle. At 5000 magnification, intergrown sheets and plates with some ettringite needles are shown. This morphology, typical of hydrated slag cement, is quite similar to that shown in Plate 3b.

Sample C-16 (H3-19)

For this sample the paste binder area indicates a wide range of fine aggregate sizes bound together by a quite porous paste. Some evidence of microcracking is apparent with extensive coverage of amorphous C-S-H productand a fine mat of ettringite needles. Both Plates 6a and 6b show these features in typical paste areas. Plate 6c is a region in which three major hydration products are apparent. Large platey crystals, probably of calcium silicate hydrates, are covered with both the needles of ettringite crystals as well as a honeycomb-like C-S-H material. Although ettringite is present in abundance, cracks shown in Plate 6d do not show the presence of ettringite.

D. Conclusions

The samples have a reasonably homogeneous distribution of binder but a wide heterogeneity of aggregate sizes although their composition is quite uniform as indicated by XRD results. The cementitious binder appears to be a slag cement as determines optically and confirmed by Scanning Electron Microscopy (SEM). The aggregate is a combination of porous limestone and quartz sand. Samples B-6, B-8 and C-7 contain sand rich aggregate with few large pieces of limestone. Large limestone aggregate is more abundant in B-7, B-21, and C-16. All samples contain an abundance of very fine limestone particles. One sample, B-7 (H3-56) is richer in cementitious binder and has a stronger matrix to aggregate bond and the matrix contains less ettringite. Both optical and SEM examination support these observations on this sample. Hydration of the slag cement was typical of good quality concrete. Greater than 90% of the cementitious material has hydrated to form the matrix.

The amount of cementitious binder and porosity are more similar to soil cement than to concrete. Relative to concrete, the cement content is lower and the porosity is higher. Porosity of the matrix is similar in all the samples with the exception of B-7 (H3-56) which has a lower porosity and this is due to the higher content of cementitious material. Because of the high fine limestone content and the porous nature of the larger limestone particles, the solidified material is significantly more porous than a similar material made with low porosity aggregate and a low fines content. The relatively high porosity of all these samples would mean that their compressive strengths are substantially lower than concrete. Slag cement usually hydrates to a relatively low porosity matrix which should inhibit migration of contaminates in the soil. The relatively high porosity of these samples is primarily due to the low content of cementitious material.

These samples appear substantially similar to the cores taken in 1988 and no evidence of deleterious reactions was observed between contaminated and uncontaminated samples nor between samples above or below the watertable.

Gypsum was observed in both the petrographic and XRD analyses. This gypsum is probably a constituent of the soil. Extremely finely ground gypsum is contained in cement but it rapidly dissolves and reacts in normal hydration conditions. The initial product is ettringite, but, when all the sulfate is depleted, the ettringite then converts to a calcium aluminum mono-sulfate hydrate (Afm). It is believed that the presence of gypsum in the soil provides a continuing source of sulfate and the sulfate is not depleted so favorable conditions are not reached for the conversion of ettringite. This hypothesis explains the observation of abundant ettringite which was made in all three analytical techniques. In the SEM and petrographic analyses ettringite was not observed in microcracks and therefore it appears no significant additional ettringite formation has occurred in the 11 months of curing since the 1988 samples were obtained.

These materials appear to be stable and it is not expected any processes should occur that would deteriorate these solidified soils. Some additional ettringite formation could occur if conditions change but this probably would not affect the durability. The cementitious material is substantially hydrated and so there is only a small amount of unhydrated material remaining to react to form ettringite. If more ettringite were to form there is a substantial unfilled volume in the pores which could fill without exerting disruptive expansive forces on the surrounding solidified soil. It is concluded that the long term durability of these materials is probably quite satisfactory.

Table 1

Sample	Aggregate			Binder			
	Qtz.	Cal.	Arag.	Gypsum	Ettring.	Port.	Plaster
B-6	Mj	Mj	Mr	?	Mr	Mr	-
B-7	Mj	Mj	Tr	Tr	Tr	Mr	-
B-8	Mj	Mj	Mn	Mr	Tr	-	Tr
B-21	Mj	Mj	Tr	?	Tr	Tr	Tr
C-7	Mj	Mj	Mr	?	Mr	Mr	-
C-16	Mj	Mj	Mr	?	Mr	Tr	-

Mj = Major   Mr = Minor   Tr = Trace

```
SPECTRUM SCAN: 400815/52
SEGMENT #1 OF 1
RANGE COVERED:
TWO THETA: 6.05 TO 62 DEGREES.
D-SPACING: 14.5968 TO 1.4956
IN 1119 STEPS OF.05 DEGREES.

   (= 0 INTENSITY (CPS) SCALE          2500 =)
```

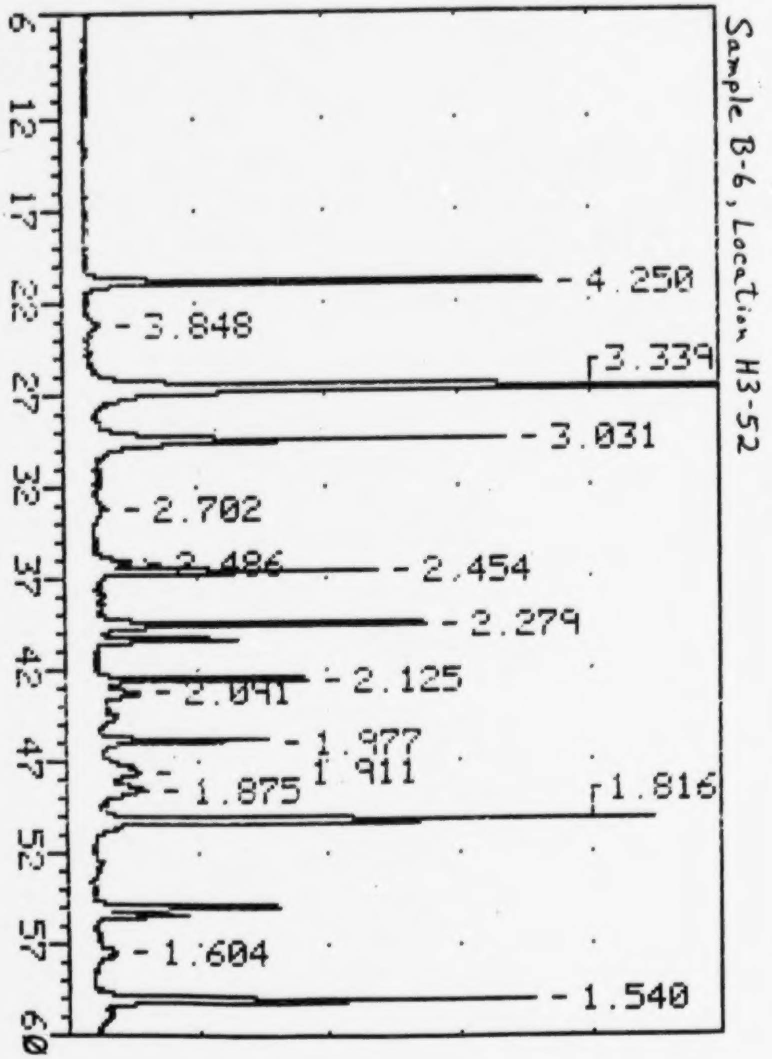

Figure 1a

```
SPECTRUM SCAN: 400815/52H
SEGMENT #1 OF 1
RANGE COVERED:
TWO THETA: 7.55 TO 21.5 DEGREES.
D-SPACING: 11.6998 TO 4.1293
IN 2[illegible]9 STEPS OF.05 DEGREES.

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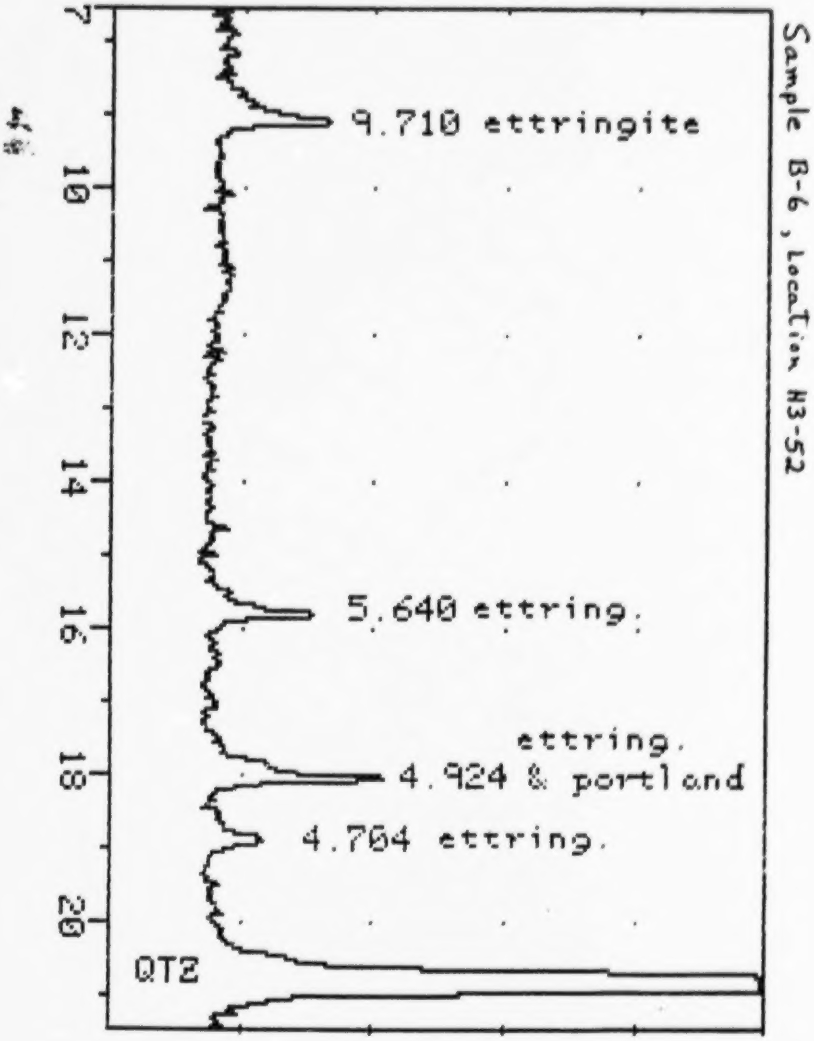
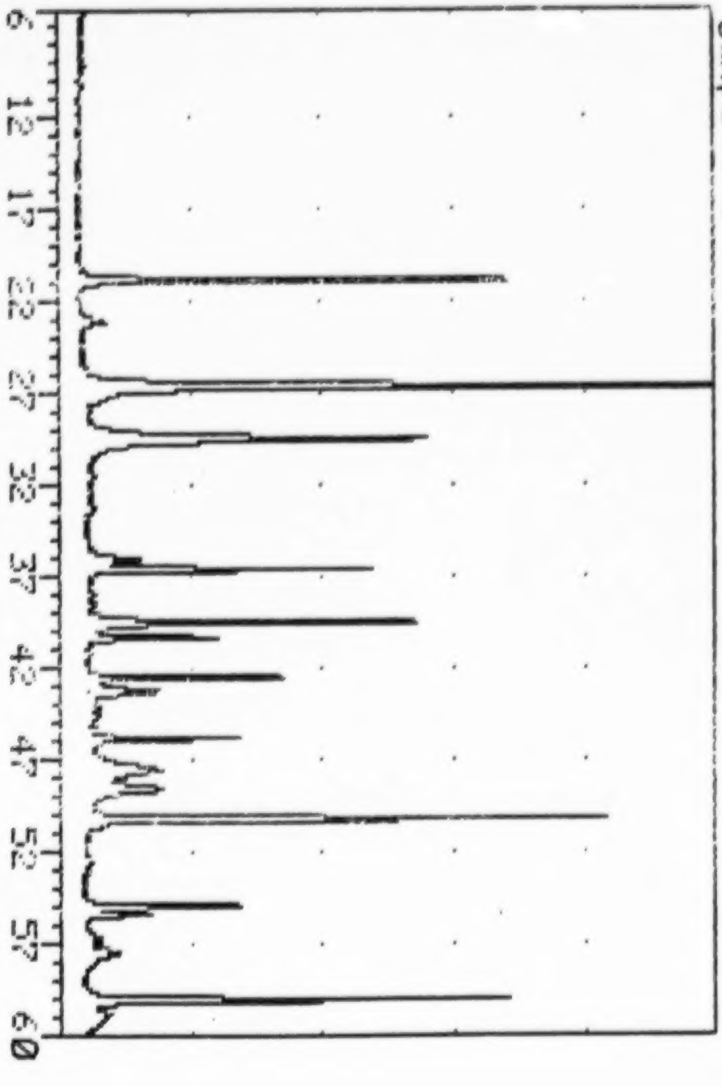


Sample B-6, Location H3-52

Figure 1b

SPECTRUM SCAN: 400615/56
SEGMENT #1 OF 1
RANGE COVERED:
TWO THETA: 6.05 TO 60 DEGREES.
D-SPACING: 14.5966 TO 1.4956
IN 1119 STEPS OF.05 DEGREES.

(= 0 INTENSITY (CPS) SCALE 2500 =)



Sample B-7, Location H3-56

Figure 2a

```
SPECTRUM SCAN: 400813/SCH
SEGMENT #1 OF 1
RANGE COVERED:
TWO THETA: 7.55 TO 21.5 DEGREES.
D-SPACING: 11.6990 TO 4.1296
IN 279 STEPS OF.05 DEGREES.

   (= 0 INTENSITY (CPS) SCALE         500 =)
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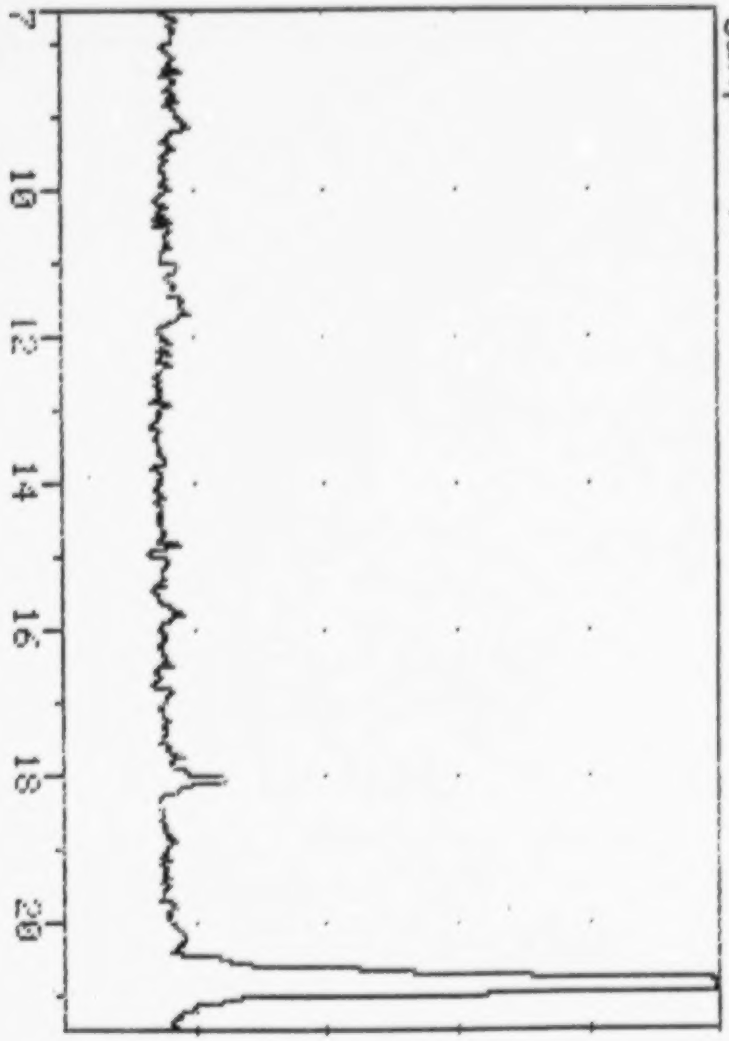
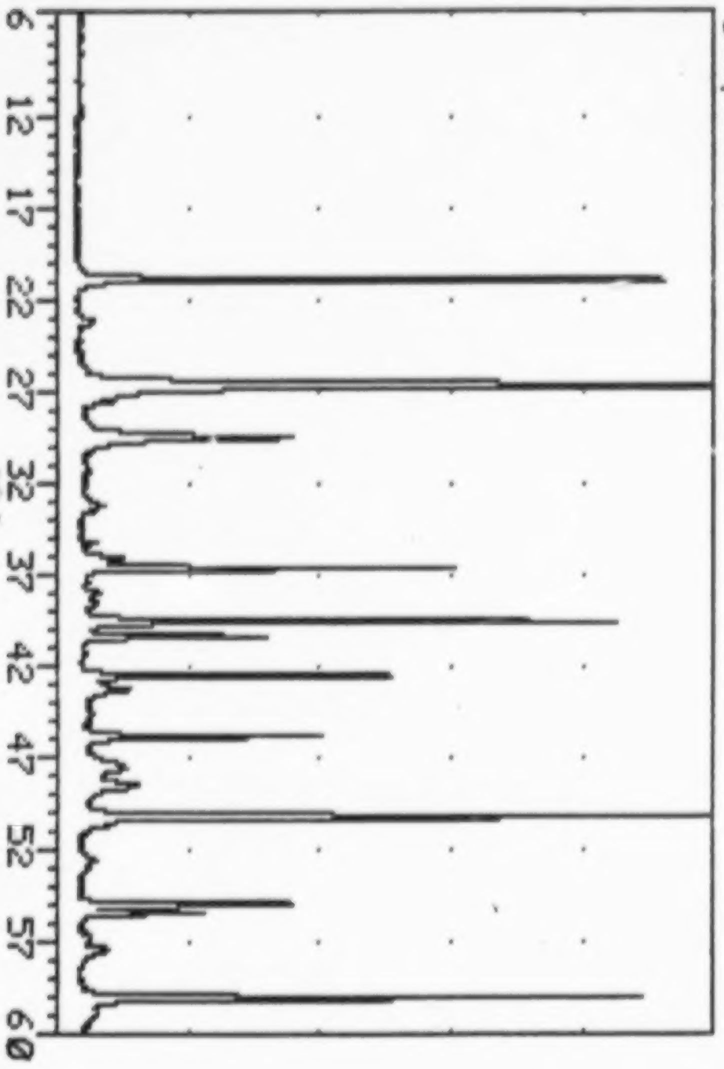


Sample B-7, Location H3-56

Figure 2b

SPECTRUM SCAN: 400815/60
SEGMENT #1 OF 1 #
RANGE COVERED:
TWO THETA: 6.05 TO 62 DEGREES.
D-SPACING: 14.5968 TO 1.4956
IN 1119 STEPS OF.05 DEGREES.

(= 0 INTENSITY (CPS) SCALE 2500 =)

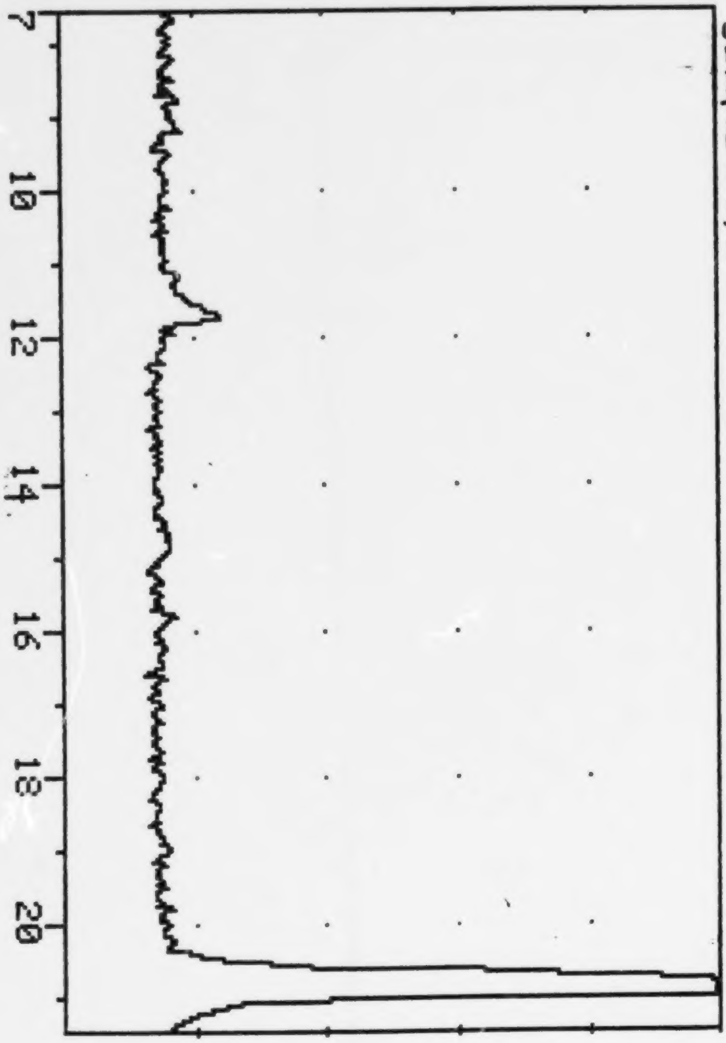


Sample B-8, Location H3-60

Figure 3a

SPECTRUM SCAN: 400815/60A
SEGMENT #1 OF 1
RANGE COVERED:
TWO THETA: 7.55 TO 21.5 DEGREES.
D-SPACING: 11.6998 TO 4.1298
IN 279 STEPS OF.05 DEGREES.

(= 0 INTENSITY (CPS) SCALE 500 =)



Sample B-8, Location H3-60

Figure 3b

SPECTRUM SCAN: 400815/39
SEGMENT #1 OF 1
RANGE COVERED:
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D-SPACING: 14.5968 TO 1.4956
IN 1119 STEPS OF.05 DEGREES.

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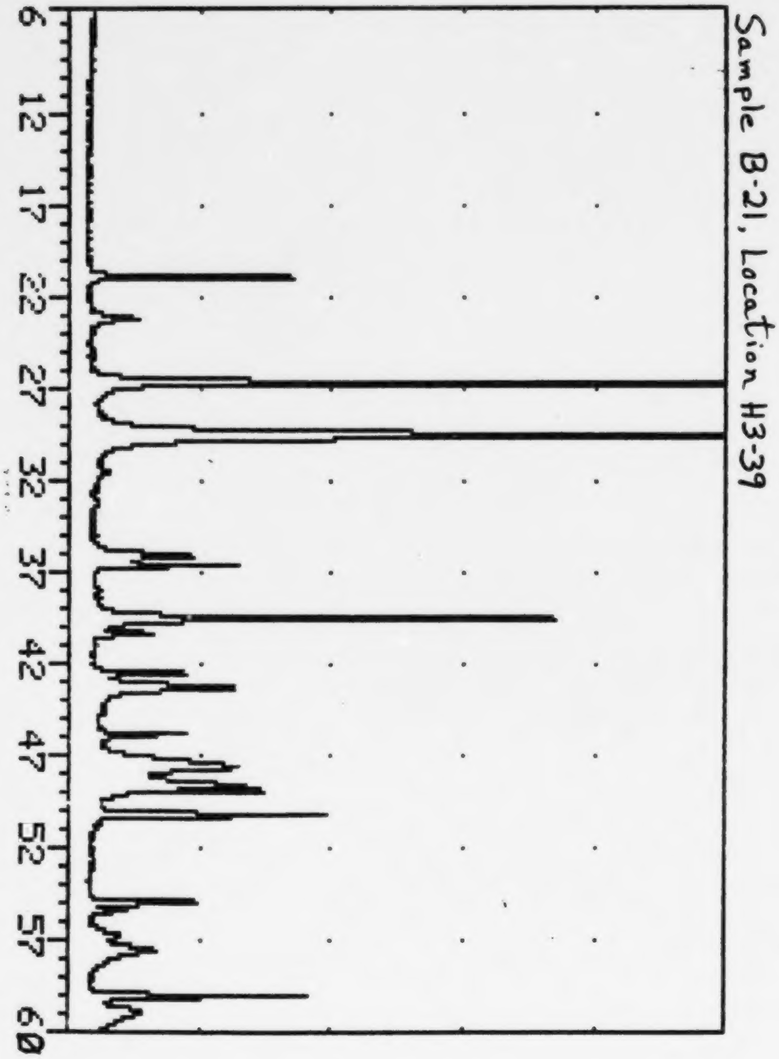

Figure 4a

```
SPECTRUM SCAN: 400815/39A
SEGMENT #1 OF 1
RANGE COVERED:
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IN 279 STEPS OF.05 DEGREES.

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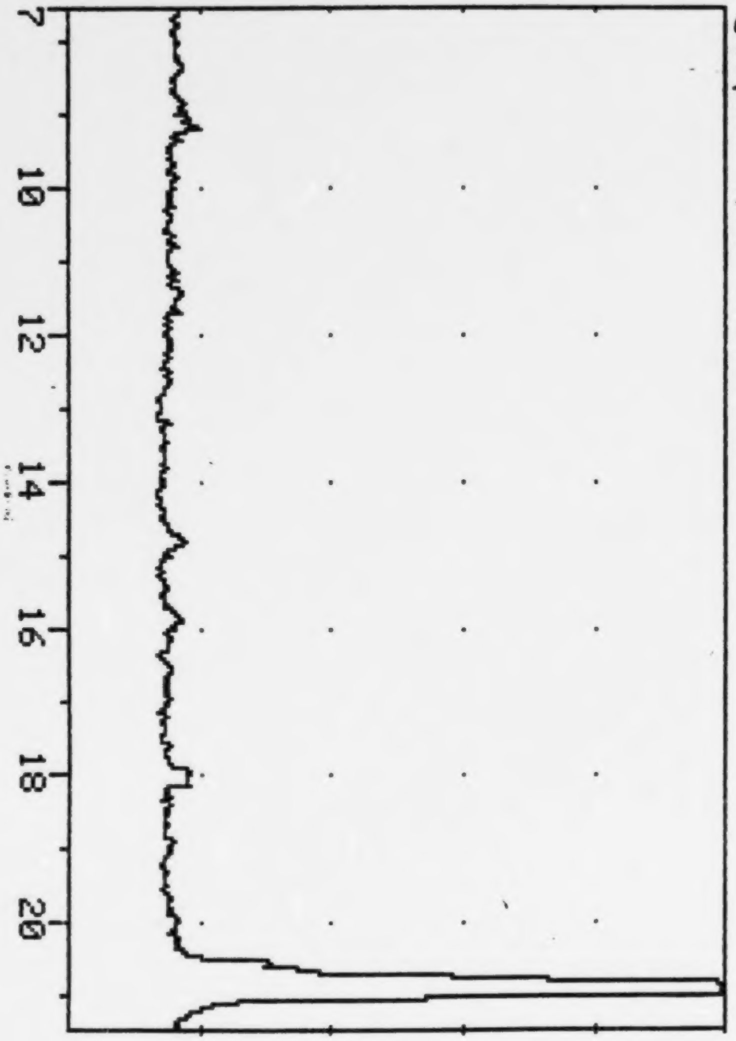

Sample B21, Location H3-39

Figure 4b

SPECTRUM SCAN: 400815/32
SEGMENT #1 OF 1
RANGE COVERED:
TWO THETA: 6.05 TO 62 DEGREES.
D-SPACING: 14.5968 TO 1.4956
IN 1119 STEPS OF.05 DEGREES.

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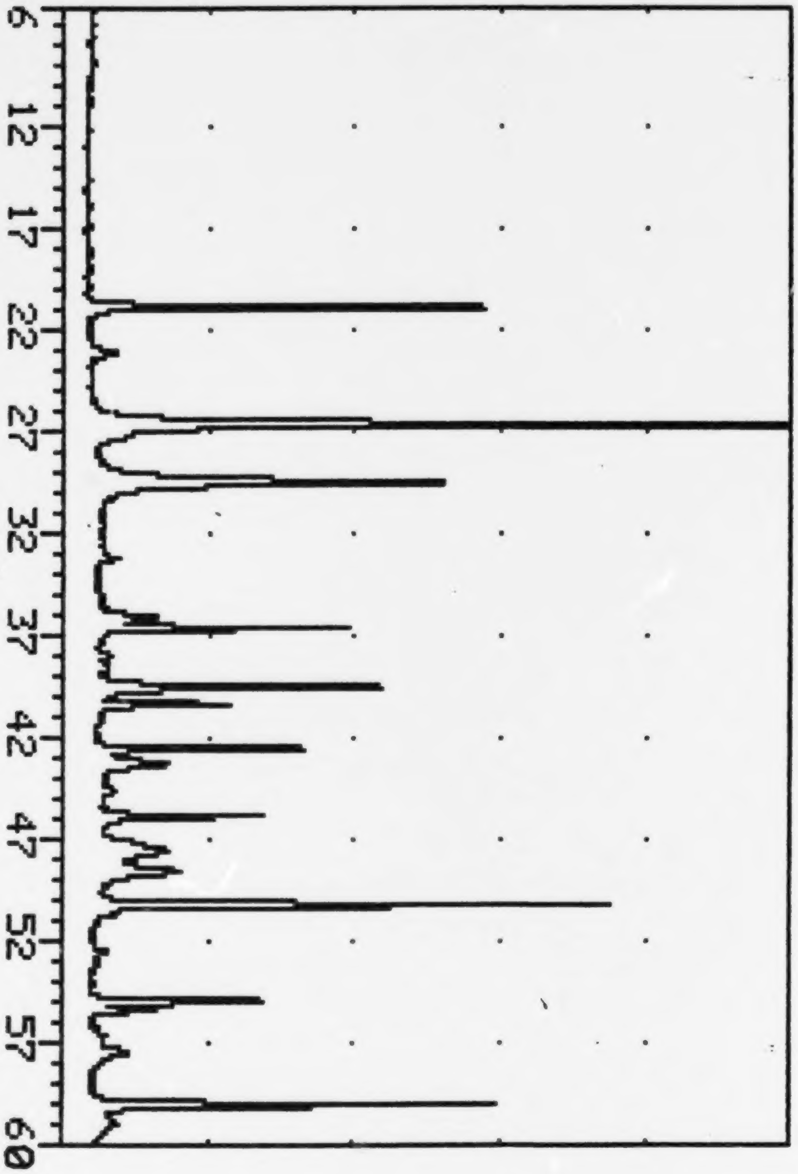
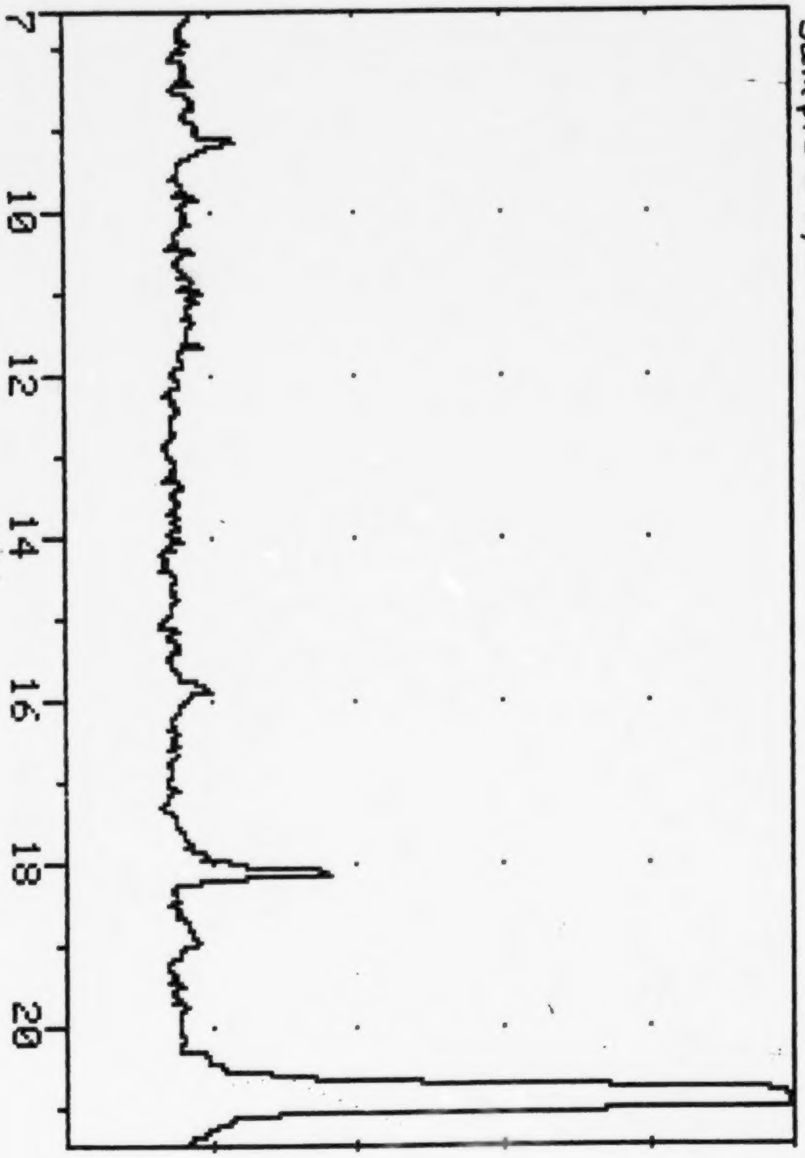


Sample C-7, Location H3-32

Figure 5a

SPECTRUM SCAN: 400815/32A
SEGMENT #1 OF 1
RANGE COVERED:
TWO THETA: 7.55 TO 21.5 DEGREES.
D-SPACING: 11.6998 TO 4.1298
IN 279 STEPS OF.05 DEGREES.

(= 0 INTENSITY (CPS) SCALE 500 =)



Sample C-7, Location H3-32

Figure 5b

SPECTRUM SCAN: 400815/19
SEGMENT #1 OF 1
RANGE COVERED:
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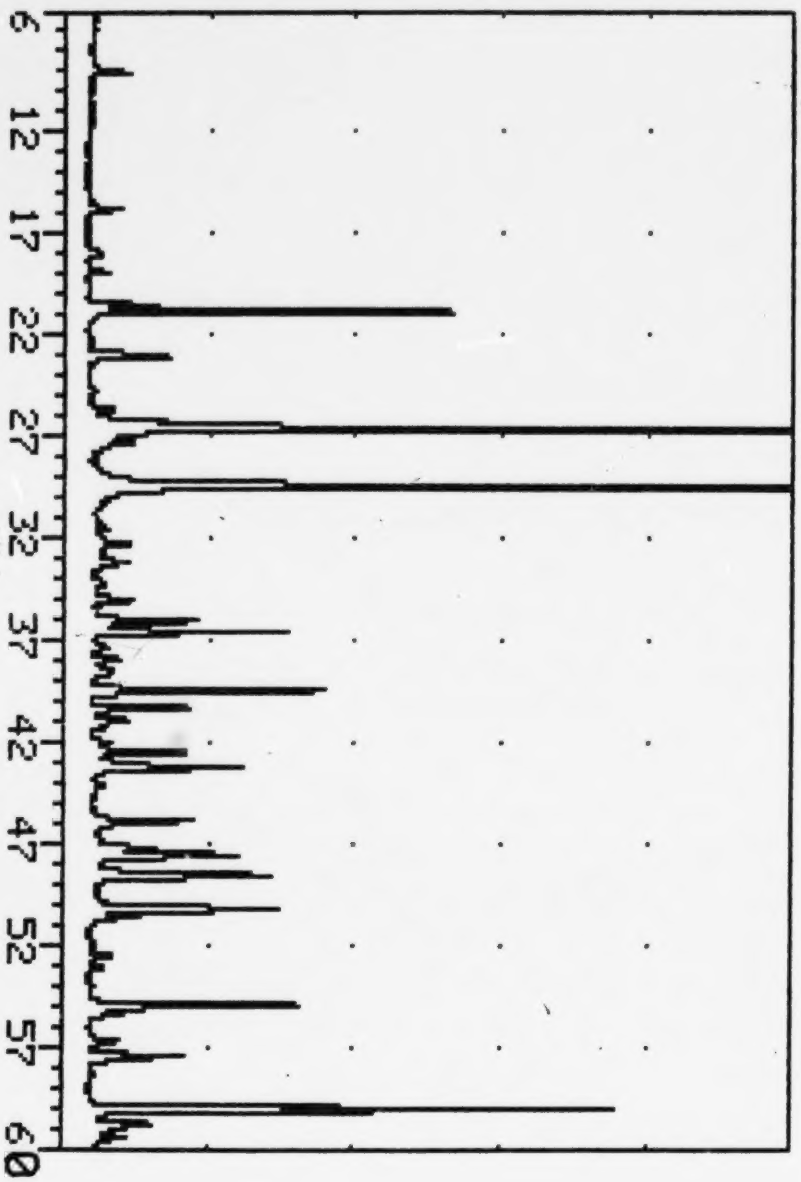

Sample C-16, Location H3-19

Figure 6a

SPECTRUM SCAN: 400815/19A
SEGMENT #1 OF 1
RANGE COVERED:
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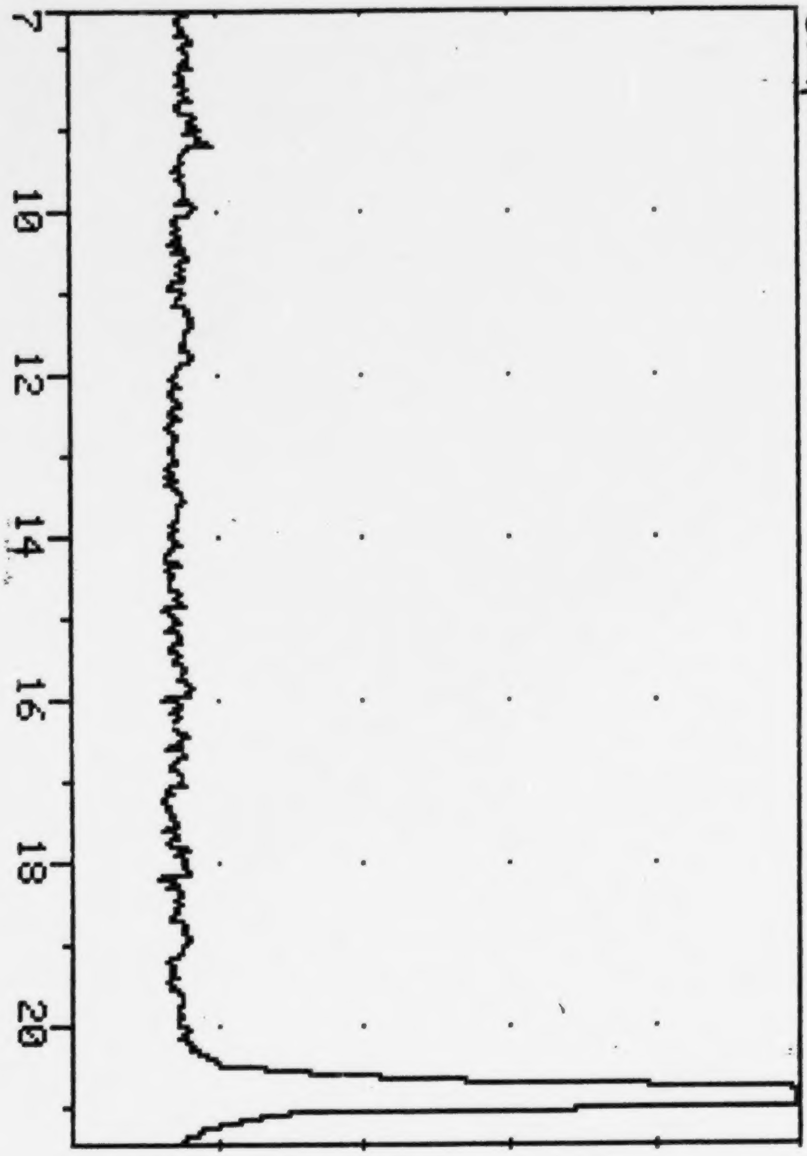
D-SPACING: 11.6998 TO 4.1298
IN 279 STEPS OF.05 DEGREES.

(= 0 INTENSITY (CPS) SCALE 500 =)



Sample C-16, Location H3-19

Figure 6b

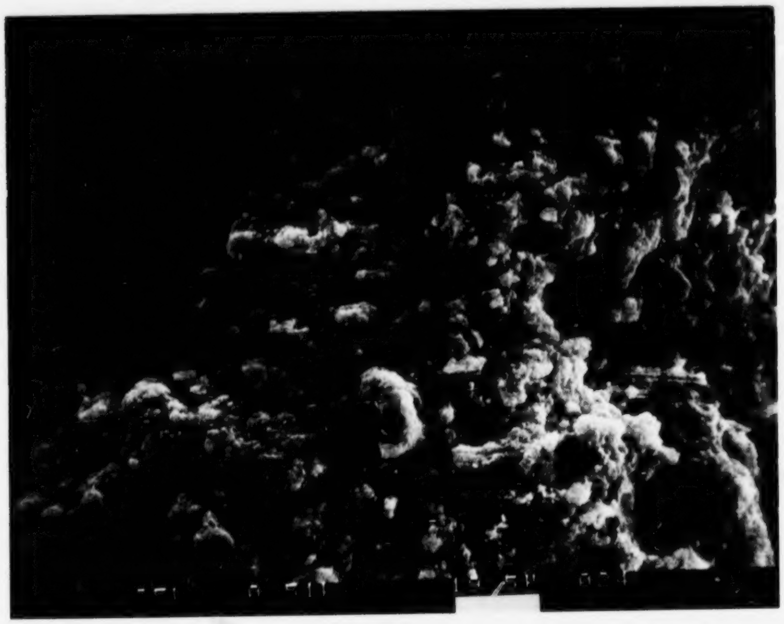


Plate 1a B-6 (H3-52)

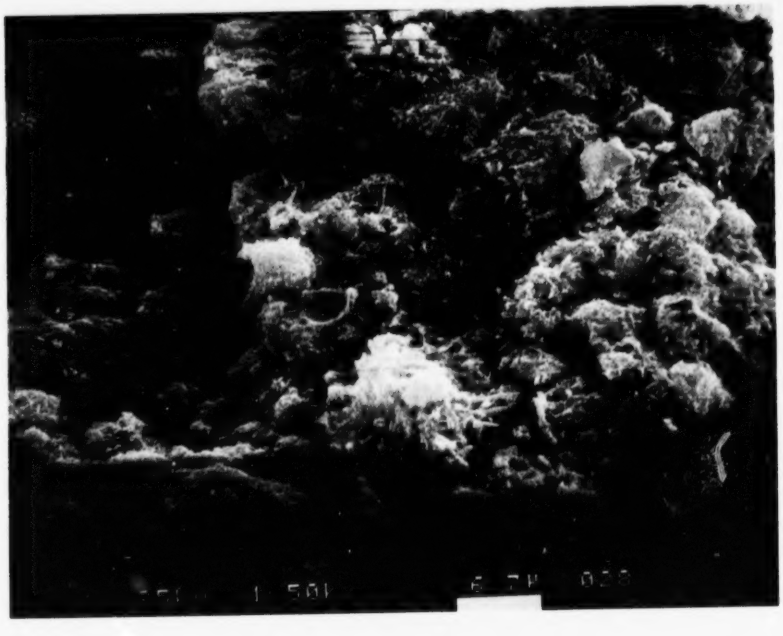


Plate 1b B-6 (H3-52)

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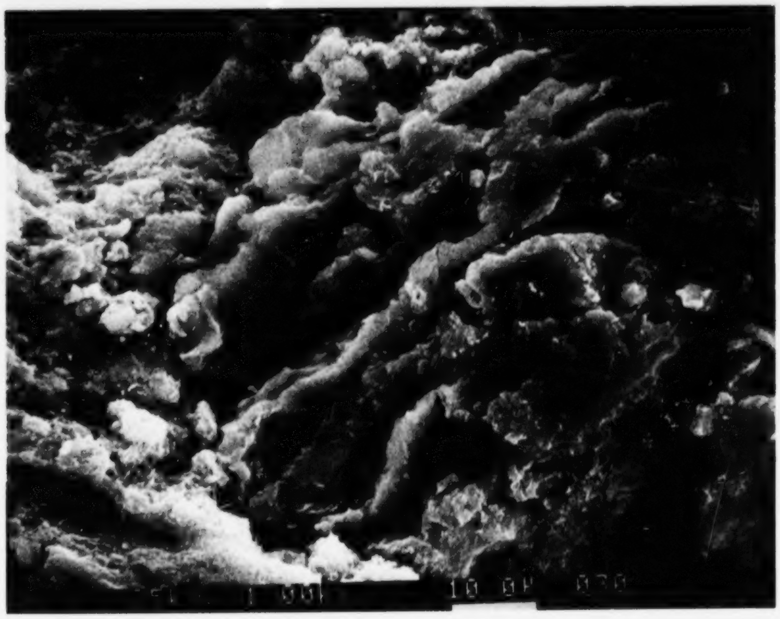
1 00K
10 0U
030

Plate 1c B-6 (H3-52)

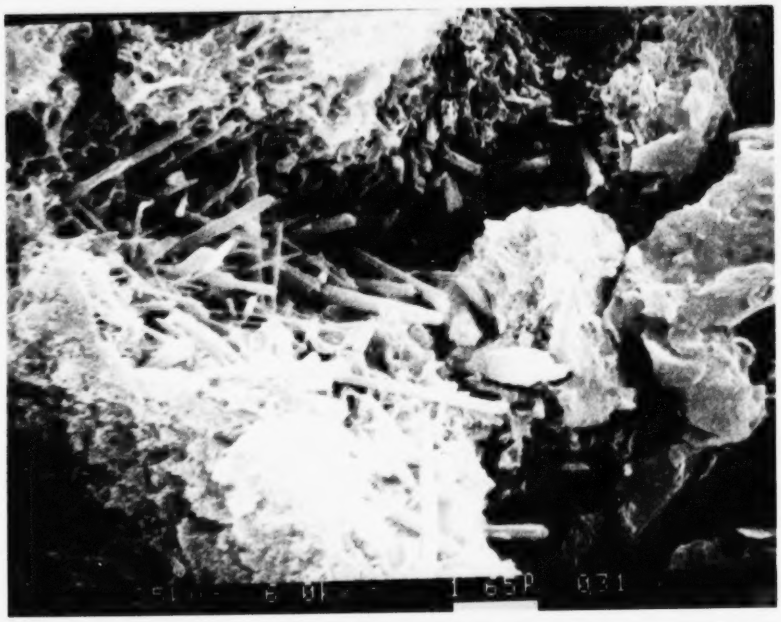
6 0K
1 65U
031

Plate 1d B-6 (H3-52)

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best available copy.

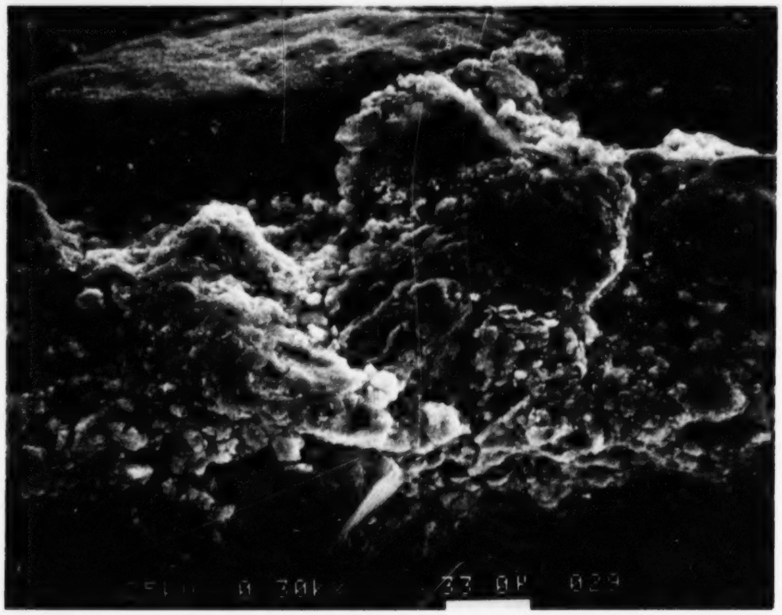
0 30K
33 0U
029

Plate le B-6 (H3-52)

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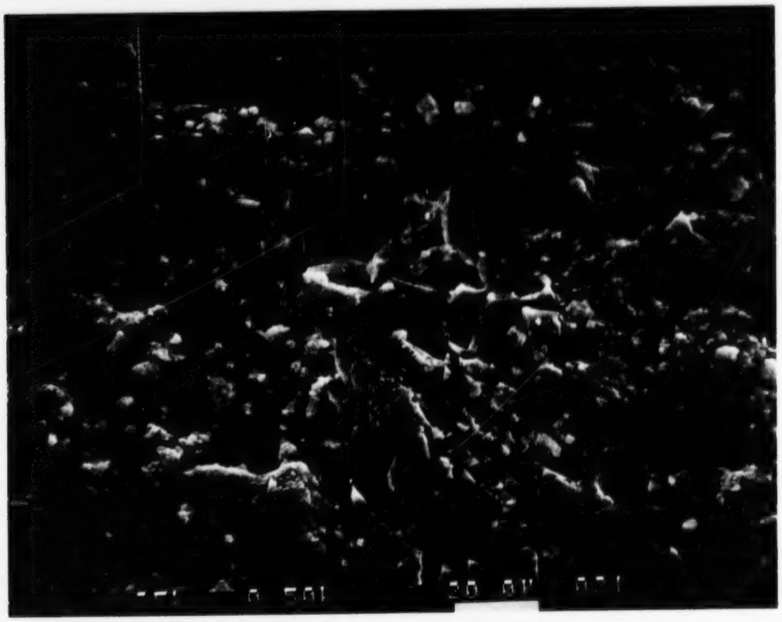

Plate 2a B-7 (H3-56)

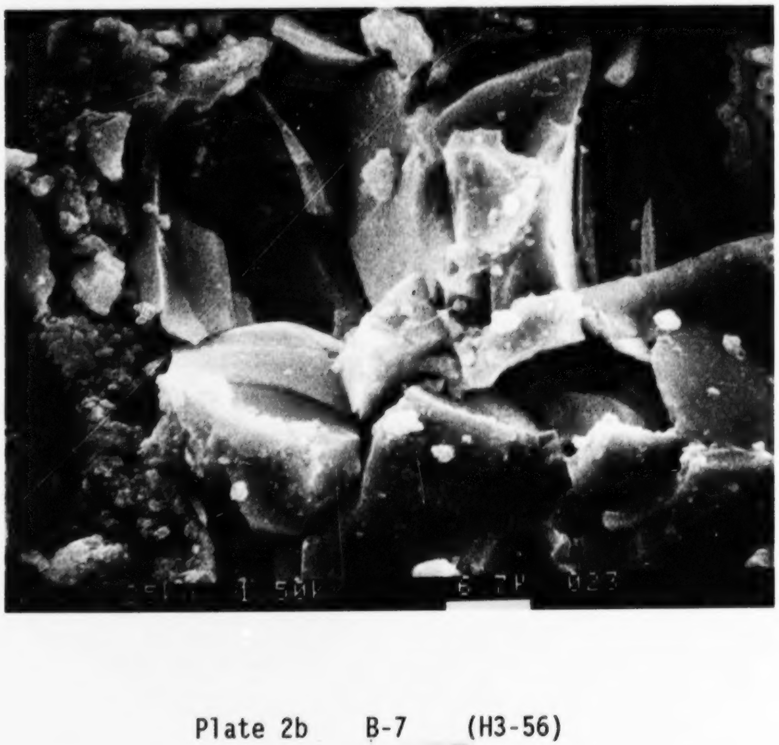

Plate 2b B-7 (H3-56)

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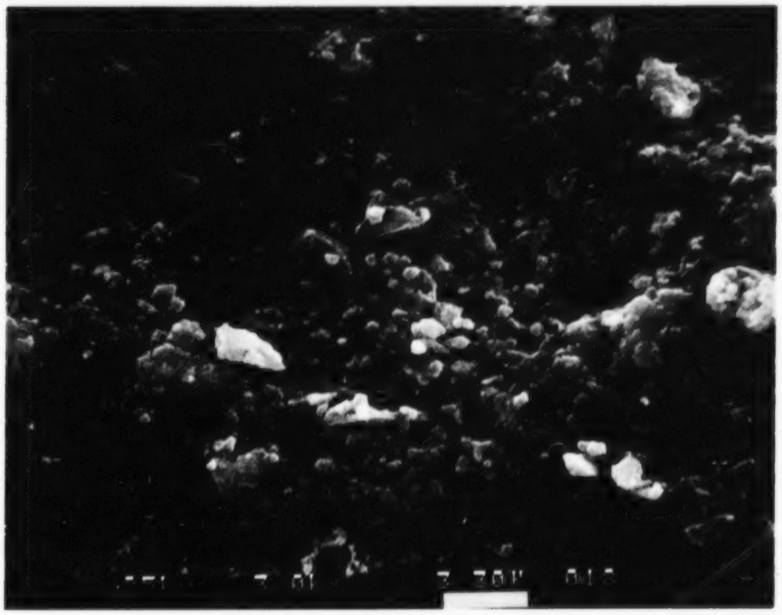

Plate 2c B-7 (H3-56)

2.01kX
5.0µ 019

Plate 2d B-7 (H3-56)

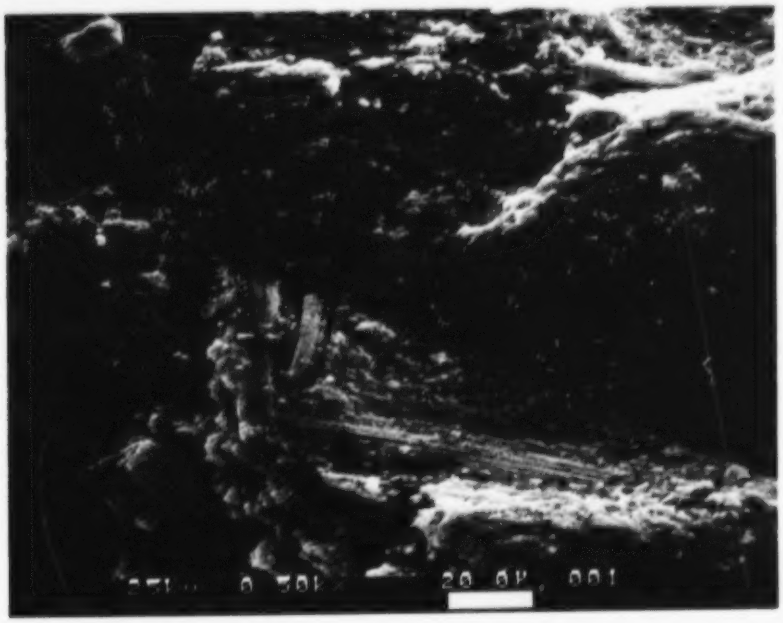
0.50KX
20.0U 001

Plate 3a B-8 (H3-60)

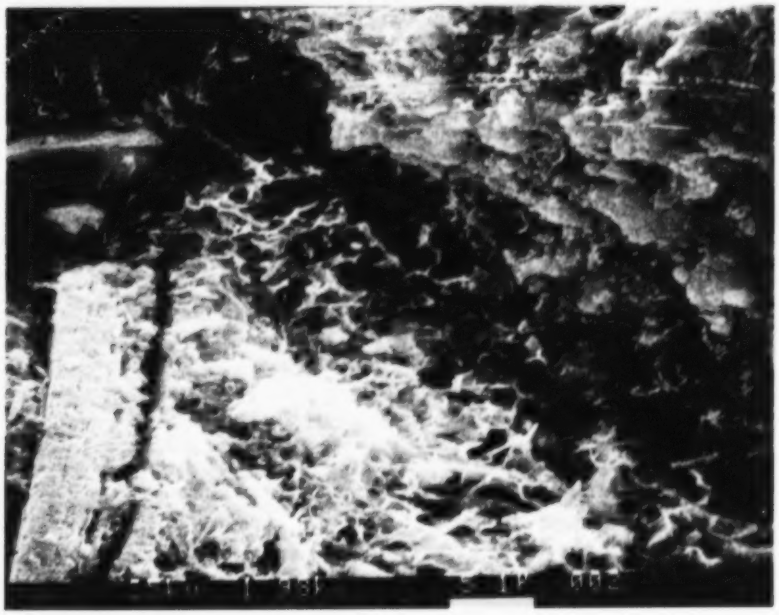

Plate 3b B-8 (H3-60)

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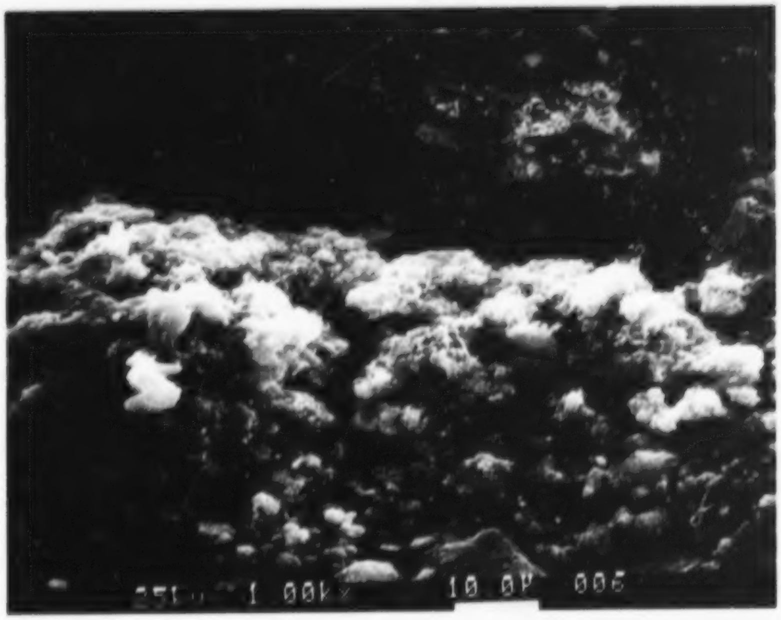
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Plate 3c B-8 (H3-60)

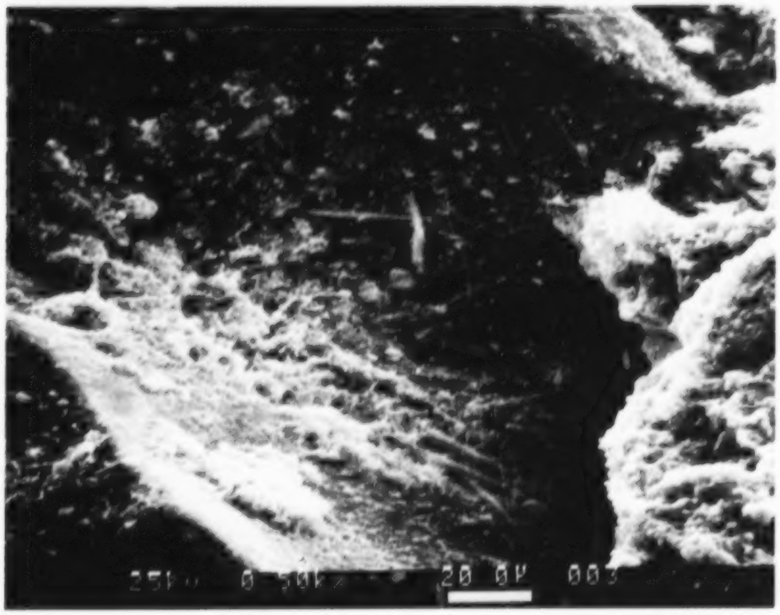
25KV 0.50KX 20.0µ 003

Plate 3d B-8 (H3-60)

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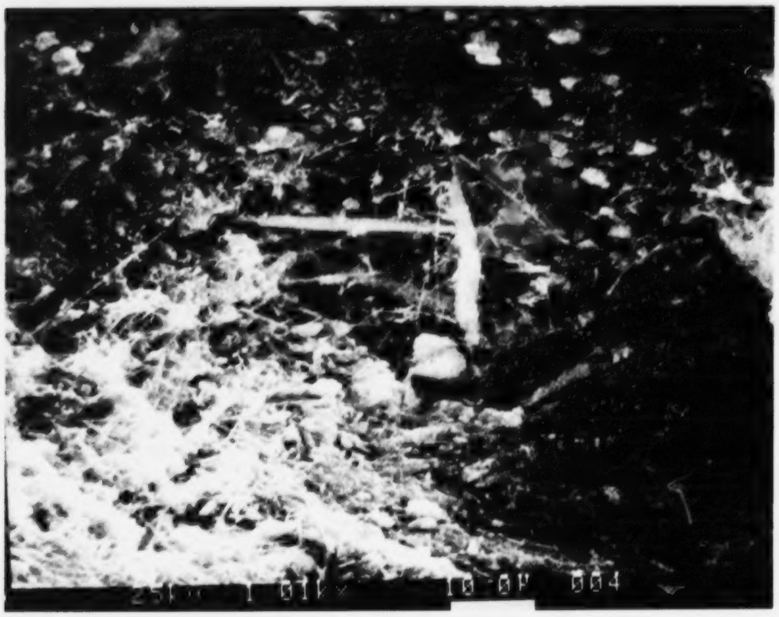

Plate 3e   B-8   (H3-60)

Reproduced from
best available copy.

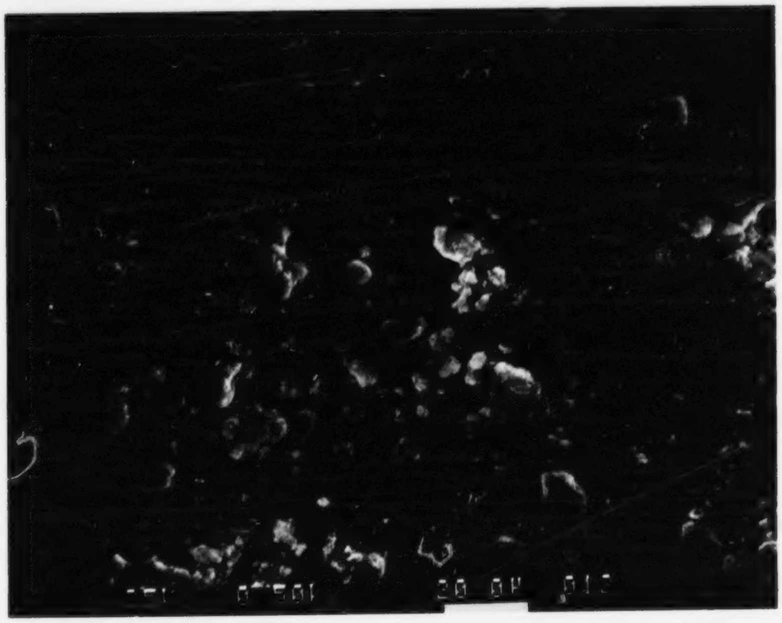
0.50K
20.0U
013

Plate 4a B-21 (H3-39)

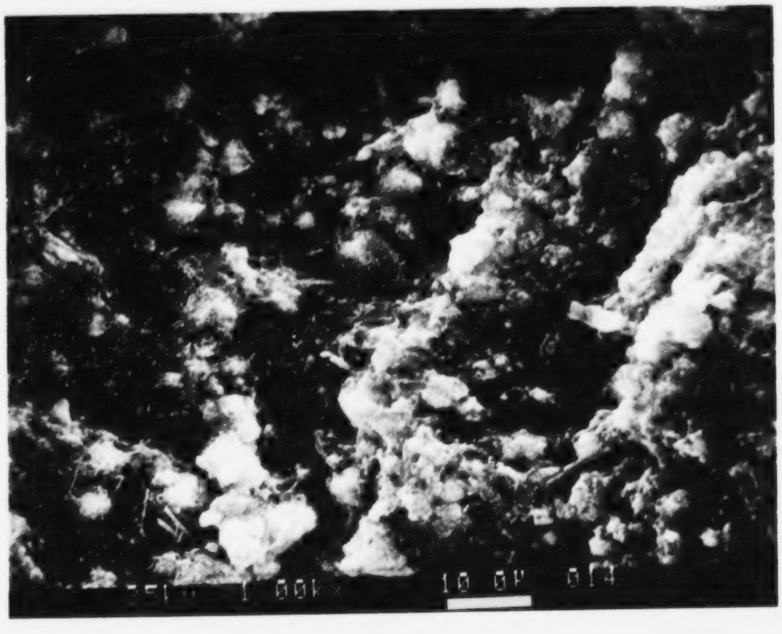
1.00K
10.0U
014

Plate 4b B-21 (H3-39)

Reproduced from best available copy.

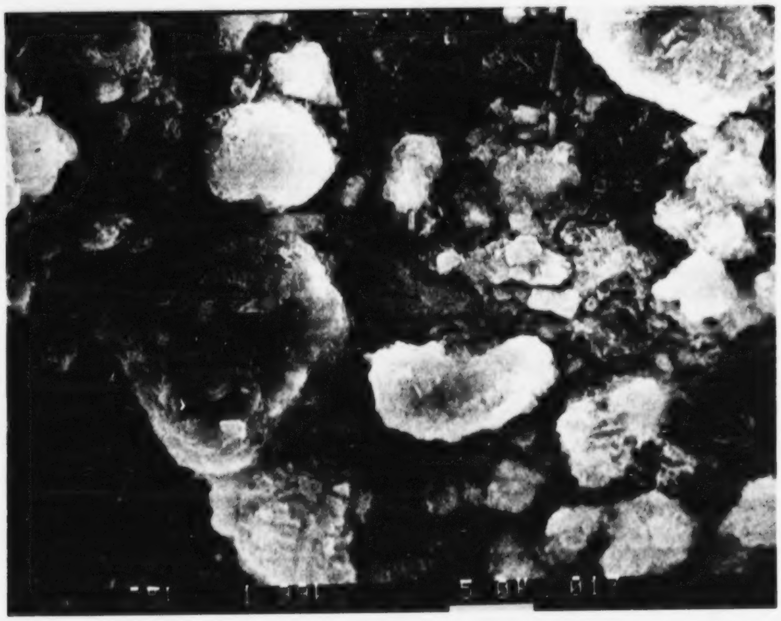

Plate 4c B-21 (H3-39)

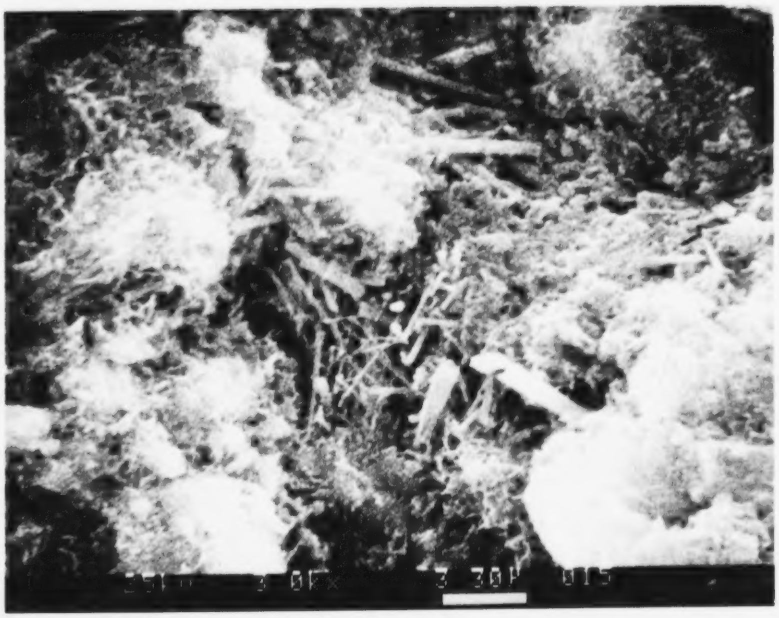

Plate 4d B-21 (H3-39)

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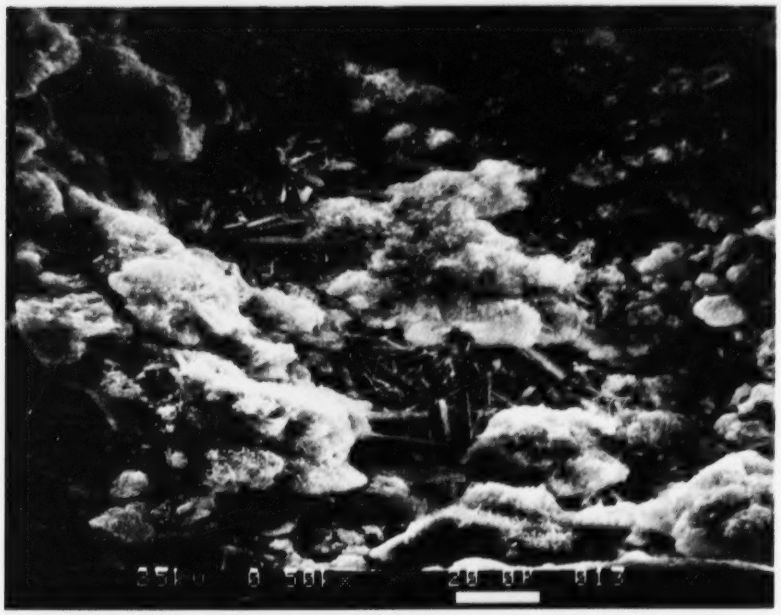
25KV 0.50KX 20.0µ 013

Plate 5a C-7 (H3-32)

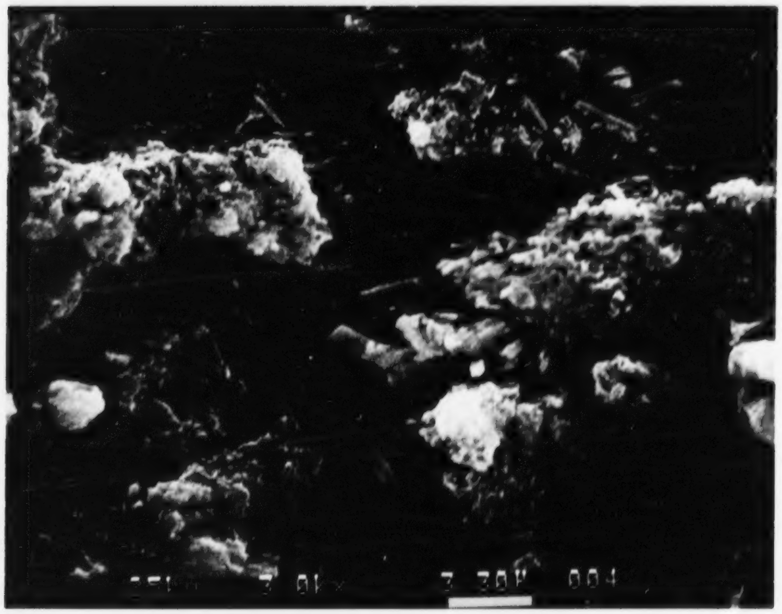
3.01KX 3.30µ 004

Plate 5b C-7 (H3-32)

Reproduced from
best available copy.

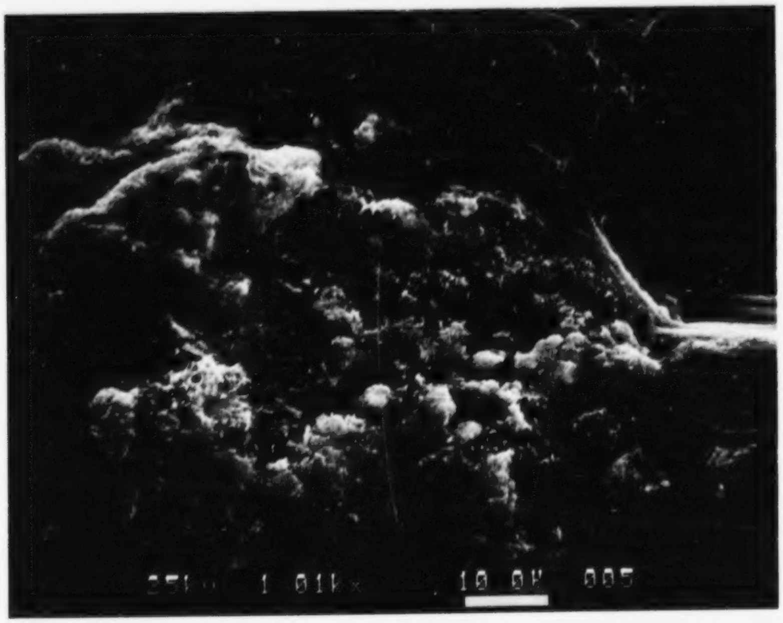
25kV 1.01kx 10.0µ 005

Plate 5c C-7 (H3-32)

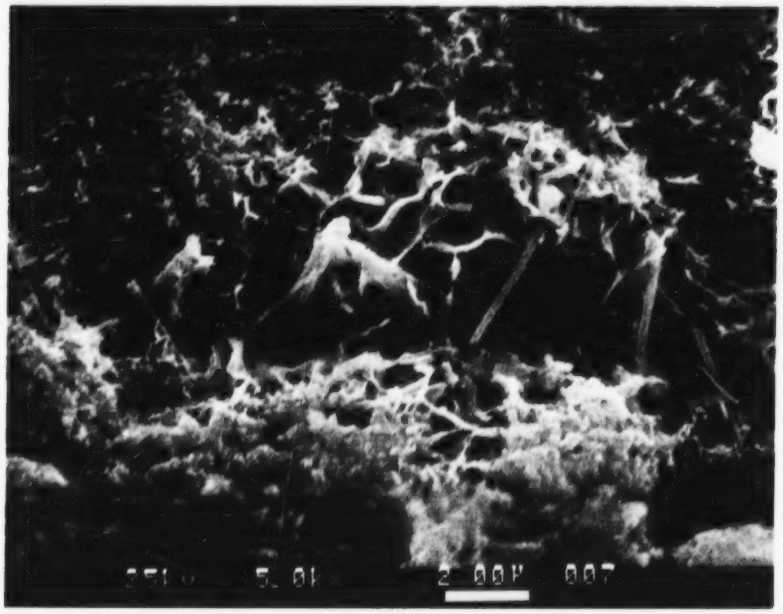
25kV 5.01kx 2.00µ 007

Plate 5d C-7 (H3-32)

(322)

Reproduced from best available copy.

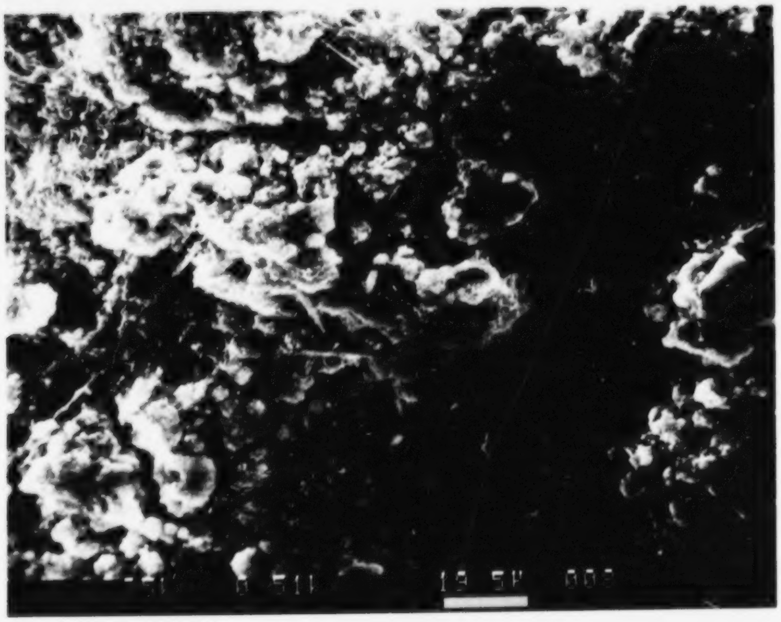

Plate 6a C-16 (H3-19)

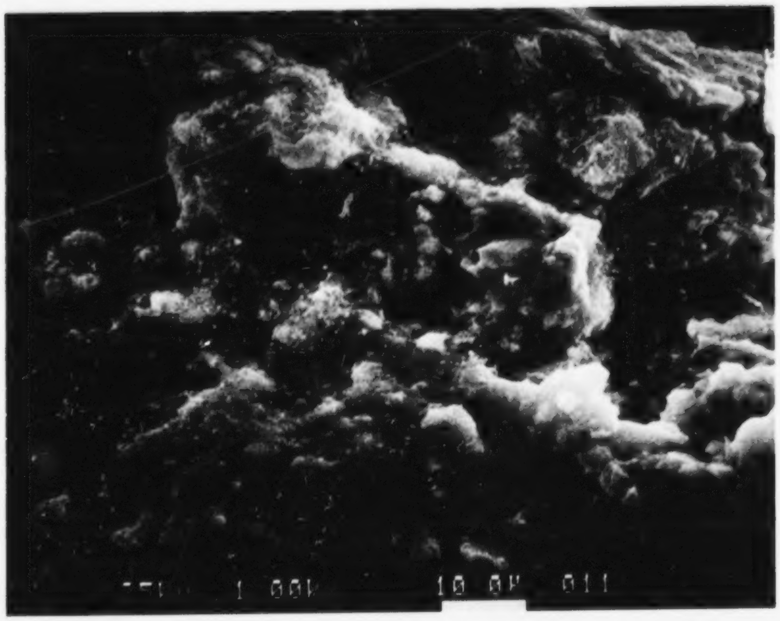

Plate 6b C-16 (H3-19)

Reproduced from
best available copy.

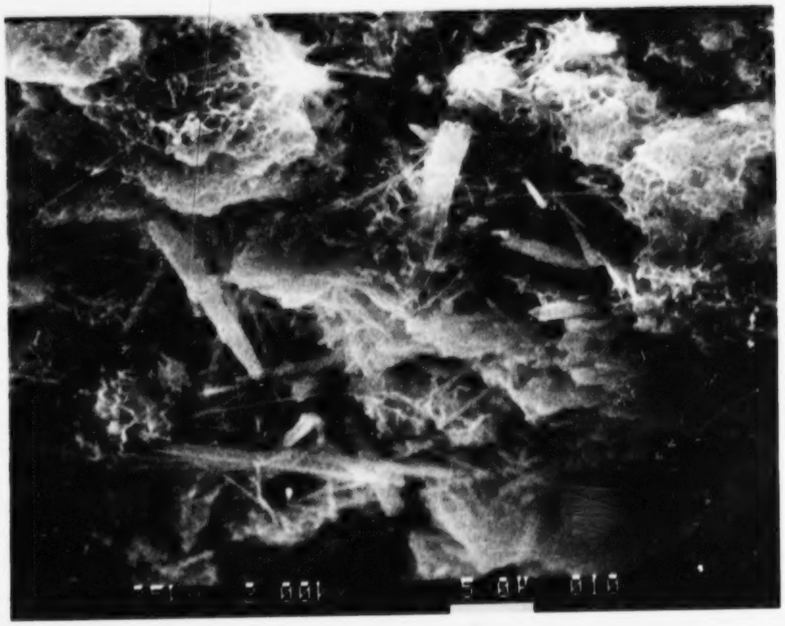

Plate 6c C-16 (H3-19)

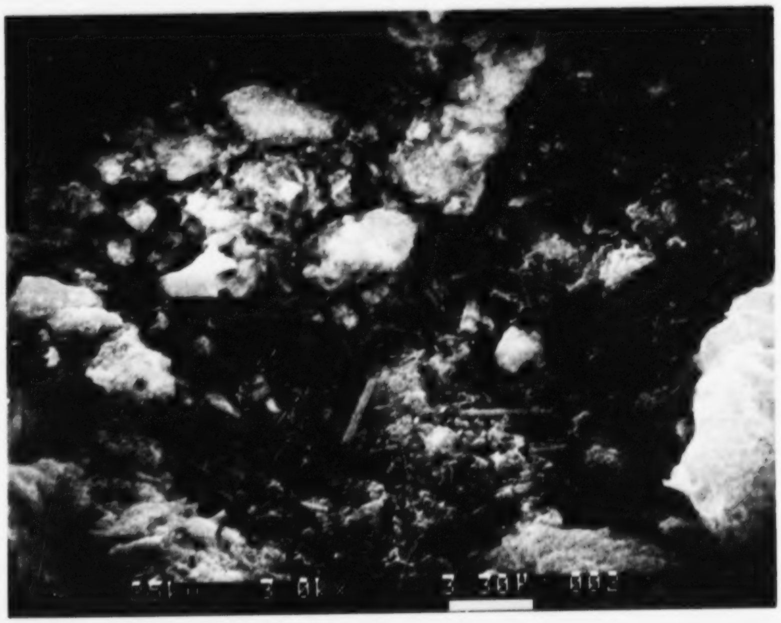

Plate 6d C-16 (H3-19)

TECHNICAL SERVICES REPORT

CTL Project No.: 400815 DATE: August 25, 1989

Re: Petrographic Examination of Cores of Solidified Waste from
Hialeah SITE, Hialeah, Florida

Six cores of solidified waste (Figure 1) were received on June 2, 1989, from Dr. Presbury West, Construction Technology Laboratories, Inc. (CTL), on behalf of Mr. Steven Sawyer, Foster-Wheeler Enviresponse, Inc., Edison, New Jersey. The six cores were identified as H3-19, H3-32, H3-39, H3-52, H3-56, and H3-60. Mr. Sawyer reported the cores represented solidified waste from the above-referenced project site.

Dr. West requested petrographic examination to evaluate the nature, homogeneity, and constituents of each core.

FINDINGS AND CONCLUSIONS

The cores each consist of soil uniformly distributed in a cementitious binder. When the cores are examined microscopically at high magnifications, unhydrated portland cement clinker (UPC) and residual slag cement grains are discernible in the binder. A mixture of portland and slag cement was evidently used for the cementitious medium.

1. The binder is soft and binder-soil bond is weak in Cores H3-19, H3-32, H3-39, H3-52, and H3-60. Binder is light gray with a green tint, contains both UPC and residual slag cement grains (Figures 2 and 3), and has a uniform appearance. Ettringite (hydrous calcium sulfoaluminate) is common in the binder and occupies air voids. These cores are rigid, but friable.
2. Binder in Core H3-56 is heterogeneous in composition (Figure 4). A large portion of the core has a moderately hard, medium light gray paste and moderately tight binder-soil bond. This medium light gray binder contains many UPC grains, but virtually no residual slag cement grains; and has abundant calcium hydroxide, a normal product of portland cement hydration product. Other portions of the core, however, have a soft, light gray binder of portland and slag cement, and a weak soil-binder bond like the other cores. Core H3-56 contains minor amount of ettringite, the ettringite occurs in air voids.
3. Soil is composed of quartz sand and limestone (Figures 2 through 5). Cores H3-32, H3-52, and H3-60 have a sand-rich soil with few coarse limestone particles. Limestone dust is observed in all cores, and is noticeably abundant in Cores H3-19 and H3-39. Little or no solid organic matter was observed in the cores. Gypsum is a minor constituent of the soil. Gypsum occurs as fine crystal lumps dispersed in the cores.
4. No evidence of deleterious chemical reactions such as sulfate attack is observed.

Other details of the petrographic examination are presented in the attached data forms.

METHODS OF TEST

Petrographic examination of the cores was performed in accordance with ASTM C 856-83, "Standard Practice for Petrographic Examination of Hardened Concrete." Saw-cut and freshly broken surfaces through each core were studied with a stereomicroscope at magnifications up to 45X. A rectangular block of approximately 1.8X1.0X0.5 inches was cut from each core, and then impregnated and mounted on a glass microscope slide with epoxy. The mounts were each reduced to a thickness of approximately 20 micrometers (0.0008 inch). The thin sections were examined using a polarized-light microscope at magnifications up to 250X to determine sample microstructure and constituents.

P. A. Studemeister

P. A. Studemeister
Research Petrographer
Technical Services Section

PAS/sea

400815

Attachments

PETROGRAPHIC EXAMINATION ASTM C 856

CTL PROJECT NO.: 400815
CLIENT: Foster-Wheeler Enviresponse

DATE: August 25, 1989

PROJECT: Hialeah SITE, Hialeah, Florida
MATERIAL: Solidified Waste

EXAMINED BY: P. A. Studemeister

page 1 of 6

SAMPLE

IDENTIFICATION: Core H3-19 (C-16).

DIMENSIONS: Diameter (D) = 2.7 in., Length (L) = 1.8 in.

CRACKS AND VOIDS: Voids of entrapped air occur scattered in core, but are not abundant. Void size ranges up to 0.1 in. Air-void content is estimated to be between 2 and 5% by volume. No cracks are observed.

REINFORCEMENT: None observed.

SOIL

CONSTITUENTS: Quartz sand and coarse limestone. Limestone is a porous, sandy (contains quartz sand particles) variety. Fine particulate limestone (limestone dust) is abundant. A few small particles of wood or vegetable matter are observed.

SIZE, SHAPE & DISTRIBUTION: Limestone particle size ranges up to 0.5 in. Angular limestone particles; rounded to subrounded quartz particles; uniform distribution of soil in core.

BINDER

COLOR: Light gray.

HARDNESS: Soft.

LUSTER: Dull.

CALCIUM HYDROXIDE*: Traces coarse crystals.

UNHYDRATED PORTLAND CEMENT CLINKER (UPC) GRAINS*: 2 to 7%; hydration product around many residual cement grains is green in color.

RESIDUAL SLAG CEMENT GRAINS*: 2 to 7%; glassy grains of slag cement.

DEPTH OF CARBONATION: Variable; to a depth of 0.4 in. from exterior.

FLY ASH*: None observed.

BINDER-SOIL BOND: Weak; few fractured particles of quartz sand are observed on freshly broken surfaces.

SECONDARY DEPOSITS: Acicular sulfate crystals of ettringite are observed in air voids.

---

*percent by volume of binder

MISCELLANEOUS: A few lumps of partially hydrated cement (portland and slag cement mixtures) are observed scattered in binder. Core is rigid but friable: core crumbles when hit by a firm blow from a small hammer.

PETROGRAPHIC EXAMINATION ASTM C 856

CTL PROJECT NO.: 400815 DATE: August 25, 1989
CLIENT: Foster-Wheeler Enviresponse

PROJECT: Hialeah SITE, Hialeah, Florida EXAMINED BY: P. A. Studemeister
MATERIAL: Solidified Waste page 2 of 6

SAMPLE

IDENTIFICATION: Core H3-32 (C-7).

DIMENSIONS: D = 2.7 in., L = 1.8 in.

CRACKS AND VOIDS: Voids of entrapped air occur scattered in core, but are not abundant. Void size ranges up to 0.1 in. Air-void content is estimated to be between 2 and 5% by volume. No cracks are observed.

REINFORCEMENT: None observed.

SOIL

CONSTITUENTS: Quartz sand and some coarse limestone. Soil is sand rich, has a relatively low coarse limestone content. Limestone is a porous, sandy, fossiliferous variety. Fine particulate limestone is common, although not abundant.

SIZE, SHAPE & DISTRIBUTION: Limestone particle size ranges up to 1.0 in. Angular limestone; rounded to subrounded quartz particles; uniform soil distribution.

BINDER

COLOR: Light gray.

HARDNESS: Soft.

LUSTER: Dull.

CALCIUM HYDROXIDE*: Traces coarse crystals.

UNHYDRATED PORTLAND CEMENT CLINKER (UPC) GRAINS*: Traces, <3%.

RESIDUAL SLAG CEMENT GRAINS*: Traces observed.

DEPTH OF CARBONATION: Variable; to a depth of 0.4 in. from exterior.

FLY ASH*: None observed.

BINDER-SOIL BOND: Weak; few fractured particles of quartz sand are observed on freshly broken surfaces.

SECONDARY DEPOSITS: Acicular sulfate crystals of ettringite are observed in air voids.

---

*percent by volume of binder

MISCELLANEOUS: A few lumps of partially hydrated cement (portland and slag cement mixtures) are observed scattered in binder. Core is rigid but friable: core crumbles when hit by a firm blow from a small hammer.

PETROGRAPHIC EXAMINATION ASTM C 856

CTL PROJECT NO.: 400815
CLIENT: Foster-Wheeler Enviresponse
DATE: August 25, 1989

PROJECT: Hialeah SITE, Hialeah, Florida
MATERIAL: Solidified Waste
EXAMINED BY: P. A. Studemeister

SAMPLE

IDENTIFICATION: Core H3-39 (B-21).

DIMENSIONS: D = 2.7 in., L = 0.8 to 2.5 in.

CRACKS AND VOIDS: Voids of entrapped air occur scattered in core, but are not abundant. Void size ranges up to 0.1 in. Air-void content is estimated to be between 2 and 5% by volume. No cracks are observed.

REINFORCEMENT: None observed.

SOIL

CONSTITUENTS: Quartz sand and coarse limestone. Limestone is a porous, sandy (contains quartz sand particles) variety. Fine particulate limestone (limestone dust) is abundant. A few small fragments of metal and plastic are observed.

SIZE, SHAPE & DISTRIBUTION: Limestone particle size ranges up to 1.0 in. Angular limestone particles, rounded to subrounded quartz particles; uniform soil distribution.

BINDER

COLOR: Light gray.

HARDNESS: Soft.

LUSTER: Dull.

CALCIUM HYDROXIDE*: Traces coarse crystals.

UNHYDRATED PORTLAND CEMENT CLINKER (UPC) GRAINS*: 2 to 7%; hydration product around some cement grains is green in color.

RESIDUAL SLAG CEMENT GRAINS*: 2 to 7%; glassy grains of slag cement.

DEPTH OF CARBONATION: Variable; to a depth of 0.4 in. from exterior.

FLY ASH*: None observed.

BINDER-SOIL BOND: Weak; few fractured particles of quartz sand are observed on freshly broken surfaces.

SECONDARY DEPOSITS: Acicular sulfate crystals of ettringite are observed in air voids.

---

*percent by volume of binder

MISCELLANEOUS: A few lumps of partially hydrated cement (portland and slag cement mixtures) are observed scattered in binder. Core is rigid but friable: core crumbles when hit by a firm blow from a small hammer.

PETROGRAPHIC EXAMINATION ASTM C 856

CTL PROJECT NO.: 400815
CLIENT: Foster-Wheeler Enviresponse
DATE: August 25, 1989

PROJECT: Hialeah SITE, Hialeah, Florida
MATERIAL: Solidified Waste
EXAMINED BY: P. A. Studmeister

SAMPLE

IDENTIFICATION: Core H3-52 (B-6).

DIMENSIONS: D = 2.7 in., L = 1.8 in.

CRACKS AND VOIDS: Voids of entrapped air occur scattered in core, but are not abundant. Void size ranges up to 0.1 in. Air-void content is estimated to be between 2 and 5% by volume. No cracks are observed.

REINFORCEMENT: None observed.

SOIL

CONSTITUENTS: Quartz sand and some limestone. Soil is sand-rich, coarse limestone particles are scarce. Limestone is a porous, sandy, fossiliferous variety. Limestone dust is observed, but is not abundant.

SIZE, SHAPE & DISTRIBUTION: Limestone particle size ranges up to 0.9 in. Angular limestone particles; rounded to subrounded quartz particles; uniform soil distribution.

BINDER

COLOR: Gray.

HARDNESS: Very soft.

LUSTER: Dull.

CALCIUM HYDROXIDE*: Traces coarse crystals.

UNHYDRATED PORTLAND CEMENT CLINKER (UPC) GRAINS*: Traces, <3%.

RESIDUAL SLAG CEMENT GRAINS*: Traces observed.

DEPTH OF CARBONATION: Variable; to a depth of 0.4 in. from exterior.

FLY ASH*: None observed.

BINDER-SOIL BOND: Weak; few fractured particles of quartz sand are observed on freshly broken surfaces.

SECONDARY DEPOSITS: Acicular sulfate crystals of ettringite are observed in air voids.

---

*percent by volume of binder

MISCELLANEOUS: A few lumps of partially hydrated cement (portland and slag cement mixtures) are observed scattered in binder. Core is rigid but friable: core crumbles when hit by a firm blow from a small hammer.

PETROGRAPHIC EXAMINATION ASTM C 856

CTL PROJECT NO.: 400815
CLIENT: Foster-Wheeler Enviresponse

DATE: August 25, 1989

PROJECT: Hialeah SITE, Hialeah, Florida
MATERIAL: Solidified Waste

EXAMINED BY: P. A. Studemeister

SAMPLE

IDENTIFICATION: Core H3-56 (B-7).

DIMENSIONS: D = 2.7 in., L = 1.8 in.

CRACKS AND VOIDS: Voids of entrapped air occur scattered in core, but are not abundant. Void size ranges up to 0.1 in. Air-void content is estimated to be between 2 and 5% by volume. No cracks are observed.

REINFORCEMENT: None observed.

SOIL

CONSTITUENTS: Quartz sand and coarse limestone. Limestone is a porous, sandy fossiliferous variety. Limestone dust is observed.

SIZE, SHAPE & DISTRIBUTION: Limestone particle size ranges up to 0.6 in. Angular limestone particles; rounded to subrounded quartz particles; uniform soil distribution.

BINDER

COLOR: Medium light gray. However, portions have a light gray, very soft, dull binder.

HARDNESS: Moderately hard.

LUSTER: Vitreous to subvitreous.

CALCIUM HYDROXIDE*: 10 to 15%; coarse calcium hydroxide crystals. Scarce in very soft, light gray binder.

UNHYDRATED PORTLAND CEMENT CLINKER (UPC) GRAINS*: Variable, averaging 3 to 8%; brown ferrite rich.

RESIDUAL SLAG CEMENT GRAINS*: Non-uniform distribution, occur in very soft, light gray binder.

DEPTH OF CARBONATION: Variable; to a depth of 0.4 in. from exterior.

FLY ASH*: None observed.

BINDER-SOIL BOND: Moderately tight; fractured quartz sand particles are observed on freshly broken surfaces. However, portions with very soft, light gray binder have a weak bond.

SECONDARY DEPOSITS: Minor amount of ettringite in air voids.

---

*percent by volume of binder

MISCELLANEOUS: Core is generally less friable than other cores.

PETROGRAPHIC EXAMINATION ASTM C 856

CTL PROJECT NO.: 400815
CLIENT: Foster-Wheeler Enviresponse

DATE: August 25, 1989

PROJECT: Hialeah SITE, Hialeah, Florida
MATERIAL: Solidified Waste

EXAMINED BY: P. A. Studemeister

page 6 of 6

SAMPLE

IDENTIFICATION: Core H3-60 (B-8).

DIMENSIONS: D = 2.7 in., L = 1.8 in.

CRACKS AND VOIDS: Voids of entrapped air occur scattered in core, but are not abundant. Void size ranges up to 0.1 in. Air-void content is estimated to be between 2 and 5% by volume. No cracks are observed.

REINFORCEMENT: None observed.

SOIL

CONSTITUENTS: Quartz sand and some limestone. Soil is sand rich, coarse limestone is a porous, sandy, fossiliferous variety. Limestone dust is observed in minor amounts.

SIZE, SHAPE & DISTRIBUTION: Limestone particle size ranges up to 0.7 in. Angular limestone particles; rounded to subrounded quartz particles; uniform soil distribution.

BINDER

COLOR: Light gray.

HARDNESS: Very soft.

LUSTER: Dull.

CALCIUM HYDROXIDE*: Traces present.

UNHYDRATED PORTLAND CEMENT CLINKER (UPC) GRAINS*: Traces, <3%.

RESIDUAL SLAG CEMENT GRAINS*: Traces.

DEPTH OF CARBONATION: Variable; to a depth of 0.4 in. from exterior.

FLY ASH*: None observed.

BINDER-SOIL BOND: Weak; few fractured particles of quartz sand are observed on freshly broken surfaces.

SECONDARY DEPOSITS: Acicular sulfate crystals of ettringite are observed in air voids.

---

*percent by volume of binder

MISCELLANEOUS: A few lumps of partially hydrated cement (portland and slag cement mixtures) are observed scattered in binder. Core is rigid but friable: core crumbles when hit by a firm blow from a small hammer.

APPENDIX D

SAMPLING LOG

4/4/89

Started long term post-treatment sampling

Drillers
  Jim Hollan
  Ray Miller

Sampling
  Mike Merdinger
  Tony Stefanelli
  Bill Taggart

Health & Safety
  Ike Jenkins

Sampling started at noon.

Sampling ended at 1900 hours

Samples were packaged and sent out by Federal Express Priority One to NUS.

Mike Merdinger

Master Sampling Log Sheet
Hialeah IWT SITE Program

Sample I.D.	Collection Date	Collection Time	Location & Depth		Sample Type	Container	Analytes	Pres.	Date Shipped	Initials	Remarks
H3-1	4/4/89	1340	C-3	7'9"-7'11½"	2⅞" core	16oz	micro	none	4/7/89	MAM	
H3-2	"	"	"	7'5"-7'8"	"	"	Perm	<4°C	4/4/89	MAM	
H3-3	"	"	"	6'11"-7'5"	"	32oz	UCS et al	"	"	MAM	
H3-4	"	1639	"	7'-7'6"	2⅞" core	"	W/D & Cont.	"	"	MAM	
H3-5	"	"	"	7'6"-7'9"	"	16oz	F/T	"	"	MAM	
H3-6	"	"	"	7'10"-8'1"	"	"	F/T Control	"	"	MAM	
H3-7	"	1851	C-1	Drilling Water	Recycle water	32oz	PCB	"	"	MAM	Drilling Water
H3-8	"	1852	C-1	6'10"-7'4"	2⅞" core	"	UCS et al	"	"	MAM	
H3-9	"	"	"	7'4"-7'7"	"	16oz	Perm	"	"	MAM	
H3-10	"	"	"	7'9"-8'	"	"	micro	none	4/7/89	MAM	
H3-11	4/5/89	0955	C-1	7'1"-7'7"	2⅞" core	32oz	W/D & Control	<4°C	4/5/89	MAM	
H3-12	"	"	"	7'8"-7'11"	"	16oz	F/T	"	"	MAM	
H3-13	"	"	"	7'11"-8'2"	"	"	F/T Control	none	4/5/89	MAM	
H3-14	"	1116	C-15	1'-1'6"	2⅞" core	32oz	UCS et al	<4°C	4/5/89	MAM	
H3-15	"	"	"	1'6"-1'9"	"	16oz	Perm	"	"	MAM	
H3-16	"	"	"	1'9"-2'	"	"	micro	none	4/7/89	MAM	
H3-17	"	1535	C-16	7'5"-7'11"	"	32oz	UCS et al	<4°C	4/5/89	MAM	
H3-18	"	"	"	7'2"-7'5"	"	16oz	Perm	"	"	MAM	
H3-19	"	"	"	7'-7'2"	"	"	micro	none	4/7/89	MAM	
H3-20	"	1617	C-17	11'-11'6"	"	32oz	UCS et al	<4°C	4/5/89	MAM	

Master Sampling Log Sheet
Hialeah IWT SITE Program

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Sample ID	Collection Date	Collection Time	Location & Depth		Sample Type	Container	Analytes	Pres.	Date Shipped	Initials	Remarks
H3-21	4/5/89	1617	C-17	11'6"-11'9"	2⅞" core	16oz	Perm	<4°C	4/5/89	MAM	
H3-22	"	"	"	11'9"-11'11"	"	"	micro	none	4/7/89	MAM	
H3-23	4/6/89	0827	C-15	11"-1'5"	2⅛" core	32oz	W/D & Control	<4°C	4/6/89	MAM	
H3-24	"	"	"	1'5"-1'8"	"	16oz	F/T	"	"	MAM	
H3-25	"	"	"	1'8"-1'11"	"	"	F/T Control	"	"	MAM	
H3-26	"	0907	C-16	7'-7'6"	"	32oz	W/D & Control	"	"	MAM	
H3-27	"	"	"	7'6"-8'	"	"	F/T & Control	"	"	MAM	
H3-28	"	0937	C-17	11'-11'6"	"	"	W/D & Control	"	"	MAM	
H3-29	"	"	"	11'6"-12'	"	"	F/T & Control	"	"	MAM	
H3-30	"	1023	C-7	7'1½"-7'7½"	2⅞" core	"	UCS etal	"	"	MAM	
H3-31	"	1123	"	7'7½"-7'10½"	"	16oz	Perm	"	"	MAM	
H3-32	"	"	"	6'11½"-7'1½"	"	"	micro	none	4/7/89	MAM	
H3-33	"	1136	"	Recycle Water	Water	32oz	PCB	<4°C	4/6/89	MAM	Drillig water
H3-34	"	1405	C-7	7'-7'3"	2⅛" core	16oz	W/D	"	"	MAM	
H3-35	"	"	"	7'4"-7'7"	"	"	W/D Control	"	"	MAM	
H3-36	"	"	"	7'7"-8'1"	"	32oz	F/T & Control	"	"	MAM	
H3-37	"	1500	Rinsate Sample		—	32oz	PCB	"	"	MAM	
H3-38	"	1536	B-21	11"-1'5"	2⅞" core	32oz	UCS etal	"	"	MAM	
H3-39	"	"	"	1'5"-1'8"	"	16oz	micro	none	4/7/89	MAM	
H3-40	"	"	"	1'9"-2'	"	"	Perm	<4°C	4/6/89	MAM	
H3-41	"	1614	B-22	4'11"-8'7"	"	"	micro	none	4/7/89	MAM	
H3-42	"	1707	B-21	1'3"-1'9"	2⅛" core	32oz	W/D & Control	<4°C	4/6/89	MAM	

Master Sampling Log Sheet
Hialeah IWT SITE Program

Sample I.D.	Collection Date	Time	Location & Depth		Sample Type	Container	Analytes	Pres.	Date Shipped	Initials	Remarks
H3-43	4/6/89	1707	B-21	1'9"-2'3"	2⅛"core	32oz	F/T&Control	<4°C	4/6/89	MAM	
H3-44	"	1725	B-22	6'3"-6'9"	"	"	w/D&Control	"	"	MAM	
H3-45	"	"	"	6'10"-7'1"	"	16 oz	F/T Control	"	"	MAM	
H3-46	"	"	"	7'6"-7'9"	"	"	F/T	"	"	MAM	
H3-47	"	"	"	8'-8'3"	"	"	Perm	"	"	MAM	
H3-48	"	"	"	8'3"-8'9"	"	32oz	UCSetal	"	"	MAM	
H3-49	"	"	"	7'1"-7'2"	"	16oz	micro spec.	none	4/7/89	MAM	
H3-50	4/7/89	0818	B-6	1'7"-2'1"	2⅞"	32oz	UCSetal+metals	<4°C	4/7/89	"	
H3-51	"	"	"	1'-1'3"	"	16oz	Perm	"	"	"	
H3-52	"	"	"	1'3"-1'5"	"	"	micro	none	"	"	
H3-53	"	"	"	1'5"-1'7"	"	2-40ml	Vol.Org.	<4°C	"	"	
H3-54	"	0901	B-7	6'3"-6'9"	"	32oz	UCSetal + metals	"	"	"	
H3-55	"	"	"	7'3"-7'6"	"	16oz	Perm	"	"	"	
H3-56	"	"	"	7'-7'2"	"	16oz	micro	none	"	"	
H3-57	"	"	"	7'-8'	"	2-40ml	Vol.Org	<4°C	"	"	
H3-58	"	0930	B-8	10'11"-11'5"	"	32oz	UCSetal +metals	"	"	"	
H3-59	"	"	"	11'7"-11'10"	"	16oz	Perm	"	"	"	
H3-60	"	"	"	11'10"-12'	"	"	micro	none	"	"	
H3-61	"	"	"	11'-12'	"	2-40ml	Vol Org.	<4°C	"	"	
H3-62	"	0958	B-9	16'-16'6"	"	32oz	UCSetal	"	"	"	
H3-63	"	"	"	16'6"-16'9"	"	16oz	Perm	"	"	"	
H3-64	"	"	"	16'9"-16'10"	"	"	micro	none	"	"	

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Master Sampling Log Sheet
Hialeah IWT SITE Program

Sample ID	Collection		Location & Depth		Sample Type	Container	Analytes	Pres.	Date Shipped	Initials	Remarks
	Date	Time									
H3-65	4/7/89	1025	B-6 Dup	1'6"-2"	2 7/8"	32oz	UCsetal + metals	<4°C	4/7/89	MAM	
H3-66	"	"	"	1'2"-1'5"	2 7/8"	16oz	perm	"	"	"	
H3-67	"	"	"	1'-1'2"	"	"	micro	none	"	"	
H3-68	"	"	"	11"-2'1"	"	2-40ml	Vol. org	< 4°C	"	"	
H3-69	"	1126	"	5"-11"	2 1/8"	32oz	W/D & Control	"	"	"	
H3-70	"	"	"	1'-1'3"	"	16oz	F/T	"	"	"	
H3-71	"	"	"	1'5"-1'8"	"	"	F/T Control	"	"	"	
H3-72	"	1201	B-6	9"-1'	"	"	W/D	"	"	"	
H3-73	"	"	"	1'3"-1'6"	"	"	W/D Control	"	"	"	
H3-74	"	"	"	1'9"-2'3"	"	32oz	F/T & Control	"	"	"	
H3-75	"	1405	B-7	6'10"-7'1"	"	16oz	W/D	"	"	"	
H3-76	"	"	"	7'2"-7'5"	"	"	W/D Control	"	"	"	
H3-77	"	"	"	7'7"-8'1"	"	32oz	F/T & Control	"	"	"	
H3-78	"	1404	B-7 Recycle Water		—	32oz	PCB	"	"	"	Drilling water
H3-79	"	1420	B-8	11'1"-11'7"	2 1/8"	"	W/D & Control	"	"	"	
H3-80	"	"	"	11'9"-12'3"	"	"	F/T & Control	"	"	"	
H3-81	"	1434	B-9	15'6"-15'9"	"	16oz	W/D	"	"	"	
H3-82	"	"	"	15'9"-16'	"	"	W/D Control	"	"	"	
H3-83	"	"	"	16'1"-16'4"	"	"	F/T	"	"	"	
H3-84	"	"	"	16'10"-17'1"	"	"	F/T Control	"	"	"	
H3-85	"	1600	Rinsate		—	32oz	PCB	"	"	"	Sampling equipment rinsate
H3-86	"	"	Trip Blank		CTDI water	2-40ml	Vol. Org.	"	"	"	
H3-87	4/9/89	1000	Drum H3-1		Cement core waste	16oz	PCB	"	4/10/89	"	
H3-88	"	"	"	"	"	2-40ml	Vol. Org.	"	4/10/89	"	

Master Sampling Log Sheet
Hialeah IWT SITE Program

Sample ID	Collection Date	Collection Time	Location & Depth	Sample Type	Container	Analytes	Pres.	Date Shipped	Initials	Remarks
H3-89	4/9/89	1000	Trip Blanks	CTDI Water	2-40ml	Vol. Org.	<4°C	4/10/89	MAM	
H3-90	"	1049	Drum #H3-2	Decon water	32oz	PCB	"	4/10/89	"	
H3-91	"	"	Drum H3-3	"	"	"	"	"	"	
H3-92	"	"	Drum H3-4	"	"	"	"	"	"	
H3-93	"	1115	Drum H3-5	"	"	"	"	"	"	
H3-94	"	1145	Drum H3-6	"	"	"	"	"	"	
H3-95	"	1500	Drum H3-7	"	"	"	"	"	"	